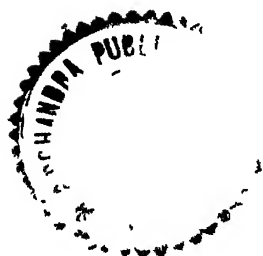


THE SECRET OF KEEPING YOUNG

VICTOR
BOGOMOLETZ

TRANSLATED FROM
THE FRENCH
BY
MARGARET DENIS



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INTRODUCTION

THIS BOOK aims at assessing what present-day biology can do about the problem of old age and the responsibilities of the scientist in the matter.

If something can be done, it must be done. Let us go on repeating this maxim again and again.

Biologists and doctors can and must 'rejuvenate' the entire covering of our body, our internal organs, and—knowing the close connection that exists between the physical and the mental—they can rejuvenate our minds.

It is for this reason that this book follows an itinerary—the 'Externalist' itinerary—which leads patiently from the outside to the inside, from the surface of the human being to his inner depths, from the superficial covering to the mind.

From the skin to the mind. This fundamental maxim of Externalist methods could form the sub-title of this book.

The book aims at being a short treatise on rejuvenation, a strategic guide to the fight against old age, ugliness and the degenerative diseases, and also a practical manual on the art of keeping young. I hope that everyone who reads it and uses it for his or her own 'individual reconstruction' will end by meeting another version of themselves, a much younger and more living version, in every sense of the words.

If not, I shall have failed in my intention.

The closing words of this preliminary message are for my colleagues in all countries and working in all branches of science connected with medicine and medical art.

I ask them to show great tolerance towards the various theories (some of them unusual today, but I believe and hope that they will soon be in normal use) put forward in this book. I ask them above all to have faith in me.

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Their criticisms will never daunt me if they appear constructive and not caused by any idle denigration.

In fact Externalism and Externotherapy will need their attention, their curiosity and their help, their direct co-operation.

Without this direct co-operation from the doctors, there is no new discovery or biological method which does not remain, to all intents and purposes, a dead letter.

The adoption of the recommendations of Externotherapy will have no complete results unless the subject to be rejuvenated is not helped and supervised by his own doctor. It will be the responsibility of the latter to lead as far as possible the fight against old age.

In conclusion I wish to pay fervent homage to Professor Alexander Bogomoletz, the last 'rejuvenator' of our century, who opened up a new way for the fight against old age in revealing the role of the physiological system of the conjunctive tissue, and whose discoveries have brought great hope to humanity. Our duty is to continue his work and find new ways of combating degeneration, senility and death.

Modern science must not forget the commandments of Alexander Bogomoletz.

V. B.

MEN AND IDEAS IN THE WAR AGAINST OLD AGE

What Do We Mean by Growing Old?

FOR THE sake of clarity, we must first of all distinguish between 'growing old' and 'being old', between 'ageing' and 'old age'.

Old age is the condition of the whole organism after time has done its destructive work upon it. It is a state which is final and irreversible.

Ageing is the progression of the organism towards its final end. It is the invisible, implacable, and gradual biochemical process of life.

Old age is a thing which can only be observed—with sadness.

Ageing is a process which we can influence—with hope.

Influence . . . But that already suggests therapy, treatment.

Let us continue for the moment to define old age, or better, to describe ageing.

I believe that we begin to grow old while we are still quite young. The organism's precociousness in beginning to run down is such as *common sense* can hardly believe. Professor Charles Richet puts its beginning at the age of twenty-five. For my part, I put it much earlier.

In fact, man knows only one complete, absolute moment of youth, and that moment comes immediately after the upsurge of puberty. At that point all the organic correlations of man are at their peak, and the machine begins to work on all cylinders. It is the biological zenith.

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And immediately afterwards the decline begins. Of course, it is far from being visible at first, and a good many years must elapse before the first external signs become evident, signs of an already advanced fatigue of the cellular and glandular system.

But this 'fatigue' of the inner organs is present, although it is concealed for a long time in the eternal darkness of the tissues and the microscopic details of biochemical activity. Man is in process of 'consuming' or, if you prefer it, 'consummating' himself. He is beginning to burn up his natural resources, very slowly at first, and then with ever-increasing speed.

What actually is this ageing then, which, particularly in man, begins so soon and advances so rapidly?

To my way of thinking, as to that of my compatriot Metchnikov, it is a process of a pathological nature.

In other words, old age is a disease, one disease among so many others.

And a *disease* can be cured!

For a long time Metchnikov tried to discover the causes of this degeneration, and attributed it to the poisoning of the organism; he believed he could explain this by the presence of putrescent toxins in the large intestine. He studied the comparative lengths of the large intestine in the different species of animals, was struck by its absence in certain types, and after much varied research concluded finally that the large intestine was not only useless but actually harmful to the human organism.

It is to Metchnikov that the credit must go for having formulated the first scientific theory of the war against old age. He gave his theory the name of 'orthobiosis', and the two Greek words from which it is derived reveal his intention that the practical methods which follow from his theory should be so many highways to 'Correct Living'.

In my opinion, the most important symptom of ageing is

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provided by the state of the skin. It is the skin which first shows visible signs of organic degeneration, whatever may be its type or degree.

The skin is the 'mirror', and an absolutely infallible reflection, of your general physiological condition. Day by day, each successive phase of ageing is inscribed on the skin of your face and your body. Very frequently, while all your organs are still functioning perfectly, the biochemical state of your cells and your glands has already begun to deteriorate. This deterioration is revealed by visible changes in the condition of your skin.

The mental symptoms of ageing have been described by Professor Charles Richet. He says:

'Cerebral activity, in general, undergoes modifications as a result of changes in the "chemical composition of the brain".'

And later, on the subject of intelligence:

'Memory, or rather the totality of memories, declines slowly between the ages of twenty and forty-five, and after that more and more rapidly. Amongst people of a very great age it vanishes complete.

'Creative intelligence is at its maximum from the thirtieth to to the forty-fifth year. It diminishes slowly until the age of fifty-five to sixty, but seems to have become almost non-existent at seventy-five. Nevertheless, any old person who was intelligent earlier still has days or hours of brightness.'

Richet goes on to name exceptions to the general rule - Voltaire, Talleyrand, Clemenceau, Chevreul, Fontenelle. We might also add Titian, Michelangelo, Corneille, Ibsen, Rodin, Pavlov, Leon Tolstoy and finally, Galileo, who discovered the rotation of the earth at the age of seventy-one.

'With the disappearance of physical strength and complete virility, the character is modified and intelligence declines', states Richet.

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As far as we are concerned, the problem must above all be considered in its 'individual' aspects, and they are infinitely varied.

If the phenomena of 'senility' and of mental ageing are incontrovertible facts, it is for us to learn whether by slowing down the general rate of ageing we can also slow down the ageing of the mind and its different faculties: memory, intelligence, judgment, etc.

My answer to this question is 'Yes'. I say most emphatically that it is perfectly possible to influence the state of the mind and intellect by direct scientific means as well as by rules governing the daily life and behaviour of each individual.

I cannot stress too heavily or too soon, however, that I do not in any way, for my own part, claim to advance a new theory about the process of growing old. Why add another theory to the heap when there are already too many?

One of these theories, one of the many, many theories, has served me as a point of departure and a guide, and it runs so close to biological reality that it is almost indistinguishable from that reality. It is the theory which arises from the work of Professor Alexander Bogomoletz and from his truly revolutionary discovery of the importance, or better still, the primacy of the part played by the connective tissue in the defence, preservation and general stimulation of the human organism.

It is from this all-important discovery that the real science of longevity and rejuvenation dates. On the basis of it we can now create methods and therapies which are capable of realizing to a greater and greater extent, the oldest dream of mankind, even if, as will be the case with Externotherapy, they appear far removed from the methods of the discoverer of the theory.

And I now believe what the most distinguished students of this branch of science believe: that we have started out along

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the road which is leading us to the great prize which is our due, a life span of 150 years.

Alexander Bogomoletz, a Great General in the Battle of Rejuvenation

Men have pursued their dream of youthful longevity for many centuries, but it is only since the achievement of Alexander Bogomoletz that they have firm ground to work on.

Professor Bogomoletz was the creator and director of the Institute of Experimental Biology and Pathology of the Ukraine; before that he had been in charge of the Institute of Blood Transfusion in Moscow, and when he died in 1946 at Kiev, the town in which he was born, he was President of the Academy of Sciences of the Ukraine.

While giving the 'great rejuvenators' of modern biology all the homage that is due to their contributions, contributions which often had the mark of genius, I feel bound to admit that Alexander Bogomoletz's theory of human longevity is the only one which has the three characteristics of being absolutely *new* (and even, in its origin, paradoxical), eminently *scientific* and *experimental*, and capable of extensive *practical application*.

In short, it *can be achieved*.

Alexander Bogomoletz brought rejuvenation into the world of reality: he did this for biology by means of a discovery, and for medicine by means of an invention.

The *discovery* was that of the part that is really played in the human organism by the connective tissue, which until then had been, of all our tissues, the least considered. Alexander Bogomoletz revealed to us that it was not only one of the most important, but was supreme amongst them, and was the very 'root' of the organism.

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The *invention* was the famous anti-reticular cytotoxic serum, which he created in order to stimulate this 'root', to help it to draw more efficiently upon the sources of life and to distribute these valuable substances throughout our other tissues, cells and glands, just as the root of a tree draws up new 'youth' from the depths of the earth and distributes it, each spring, to the trunk, the branches, leaves, fruit and flowers.

I should emphasize here that the methods of my Externotherapy are original methods in that, although they take as their starting point the discovery of the part played by the connective tissue, they employ other means of rejuvenation than the serum.

These other means, these 'remedies' or 'stimulants' that I was able to produce in the light, as I must stress again, of the work of Alexander Bogomoletz, I have called Externes. They are used together with methods of biological stimulation against ageing which have been founded upon new rules of physiological, hygienic and mental conduct.

I began my work at the end of the last war, when it became clear to me that utilization of the Bogomoletz serum would not be very easy to effect (the obstacles being not only of a scientific order, but being due also to the financial, legal and social barriers between one country and another). Moreover, the accident which snatched Alexander Bogomoletz away from his revolutionary work in the prime of his *youth* and genius at the age of sixty-four, had robbed him of the time in which to develop his discoveries and to orientate them along the lines of medical practice and daily custom and behaviour.

I shall explain later on in greater detail what kinds of difficulties beset any large scale application of the Bogomoletz serum.

Meanwhile, his decisive discovery remains for us. It is like a rock in its stability, and like a door in the prospects that it opens up for every courageous biologist. What 'courage' I have as

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a biologist; my work and all its results (the Externes and the whole of Externotherapy) are due to having passed through this door that Alexander Bogomoletz opened.

The title of one of the chapters in his book, *How Can We Prolong Life?* is 'Old age seen as the loss of the power of regeneration'.

By this statement, he directly connects the problem of ageing with the greater or lesser capacity of our cells to re-create themselves.

Here is a quotation from this work which concerns the skin and so has a direct bearing on my own methods.

'The skin loses thousands of millions of cells, the superficial coverings of which fall with the hairs and disappear in the process of renovation of the teguments. These cells die and are replaced by new cells.'

He stresses that the different cells of the human body are far from having an equal capacity to multiply and replace themselves. The most powerful in this respect are the blood cells, those that produce spermatozoa, the cells of the liver and those of the connective tissue. At the other extreme, the cells of the nervous system do not multiply and are never renewed. A nerve cell that has become completely old and exhausted is lost for ever.

With reference to the extr. ordinary experiments which were made by Dr. Alexis Carrel with the object of keeping alive the tissues of the heart of a chicken embryo over several decades, Bogomoletz notes that 'The rejuvenation of the environment, like the change of environment in artificial cultures, plays an immense part in the vitality of cells'. And he comes to the conclusion that it is necessary 'to learn how to modify the state of the inner environment in which the cellular elements live, to discover ways of healing it, purifying it and renewing it systematically.'

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As I see it, this question of the life of the cells presents the biologist and the physician with a unique battlefield on which to fight for the preservation of youth. And one of the weapons that my colleagues and I have chosen so that our tactics on this field of battle may be both speedy and effective is that of the preservation of the regenerative 'environment'.

To round off this sketch of Alexander Bogomoletz's opinions about the problem of ageing I must at least touch upon his famous physico-chemical theory.

He drew attention to the tendency of the cellular substance to restore those particles called protoplasmic 'mi-cells' which are modified and destroyed in the course of organic life. It is useful at this point to note that the cellular substance is a compound that you might liken to an 'emulsion' of very small particles. These particles undergo reciprocal action. Bogomoletz declared that 'contemporary science does not properly understand these phenomena and the forces that set them in action' and he elaborated and propounded a precise theory about them, for which there is, unfortunately, no room in a work of this nature.

Here is another quotation from Bogomoletz: "The nutrition of the cells become disturbed: hunger follows; vital activity decreases; old age and death ensue."

This raises the problem of the part played by water in the living organism. In the eyes of Alexander Bogomoletz (and even more perhaps in mine) this part is considerable, is, in fact, enormous.

We know that with age man loses the original capacity of the cells of his organism to retain water. Metchnikov had said that 'Man dries up'. It has been observed in fact that water enters into the composition of the human embryo in the proportion of 96%.

It decreases in an adult to an average of 64.5%. Who has not

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seen old people as dried up as tree trunks, withered by the sun and ravages of the weather?

In reality, an ageing organism does not dry up because of a sudden stoppage in its 'water supply', but because it becomes more and more incapable of retaining water in the cells of its skin, muscles and internal organs. Alexander Bogomoletz said that the weakening of this natural aptitude of the body 'is a consequence, and not a cause, of the senile changes in the cellular protoplasm.'

It can be seen from all this that ageing has its cause in the biochemical condition of the cells and in the drop in efficiency of the process of metabolism which by degrees slows up and no longer fulfils its function with the normal intensity of a young organism.

In this extremely sketchy outline of the biochemical-physical theory of Alexander Bogomoletz may be found the principles and the ground work upon which I, in my turn, have erected my own methods of 'putting the brake on' old age.

I cannot, however, finish this section without a mention of the famous serum. Its proper name is the 'anti-reticular cytotoxic serum' and it is obtained from a horse after it has been injected with powdered human spleen and powdered marrow from the sternum. Both of these ingredients are very rich in connective tissue and they must be taken from the bodies of young and healthy persons who have died accidentally. Furthermore they must be taken within a very few hours after death.

As a result of this 'human' injection, the body of the horse, as if to defend itself against this invasion of foreign tissues, begins to secrete specific antibodies. When the serum, infested with these antibodies, is in turn injected into a human being, it could go as far as to paralyse and destroy the connective tissue, for it is a deadly poison if administered without care. But in

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small quantities, in *measured* quantities, it becomes, on the contrary, a factor of stimulation and regeneration of the connective tissue, and through it, the tissues and cells of the whole organism.

I need not stress that the preparation and preservation of the serum is a very difficult business, and that its application requires perfect knowledge of the methods of administering doses, not to mention the necessity in certain cases of making a whole series of more or less complicated biological tests.

In Soviet hospitals, Alexander Bogomoletz's serum is in current use in the treatment of various diseases and numerous morbid conditions.

In the west, on the other hand, we are still a long way from overcoming the obstacles (scientific, legal and administrative) which lie in the path of any attempt at general use of this treatment for prolonging youth.

Dr. Alexis Carrel and the Idea of the 'Health of the Whole'

Dr. Alexis Carrel is one of those masters of biology— and they are really rare—who have drawn from their intelligence and talent the strength to rise above the limitations of scientific experiments, to look beyond purely scientific discoveries, to burst open, in fact, the bolted door of their 'Ivory Tower' in order to give their attention to the problems of real life, the future of the individual and of society.

In the person of Alexis Carrel we find the marvellous fusion of biologist, philosopher and humanist.

What is more, this great thinker was not content to make affirmations merely by giving more or less clever shape to the logic of his intuitions. His affirmations were always the result

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of *successful experiments*. Many attempts, many revisions and results endowed him in the end with a vast practical knowledge of the conduct of human life. The 'judgments' of Alexis Carrel correspond to each of the great biological, physical, chemical and physiological laws of the external universe and of the universe that is man, and they are all fully substantiated, as the lawyers would say, all justified by a courageous and assured contact with reality.

It is, of course, impossible in a work of this size to show in detail the importance and magnitude of Carrel's discoveries. But we can single out the essential facts which are directly relevant to any struggle against old age.

In the first place, Dr. Carrel demonstrated to science and to scientists the all-important part played by the biophysico-chemical life of the cells, glands and secretions. He emphasized that, this being so, it was essential for official medicine to admit that the natural living forces of the cells, tissues and glands must be the subject of systematic and repeated experiment.

One of the major criticisms that Carrel raised against modern medicine (and it is a criticism that I think raises unlimited possibilities for the future of therapeutics) was that it is 'artificial'. By this he meant that our present-day medicines and treatments are nothing but 'the products of pharmaceutical factories'.

Having thus denounced the industrial and mass-produced character that now graces the science of Hippocrates, he proclaimed the necessity of seeking out, and then stimulating, the forces of the body itself, instead of attempting to soothe its ills by substituting synthetic, that is manufactured, substances for living substances.

It was in the heart of living matter that he looked for all these vital forces.

Even if his endeavours were not directly aimed at the fight

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against old age, Carrel made a substantial contribution in this field by his research upon the life and structure of the cells, and by the scientific and philosophical recommendations that he deduced from it.

Thus he was led to affirm the importance of a conception of the 'health of the whole', taking into account at one and the same time the state of the organs, the mental bearing of each individual and the influences which the 'environment' in which he is plunged never cease to exercise upon him.

After filling these two gaps in therapeutics (the knowledge and utilization of the 'psyche' and the 'environment') Carrel went on to draw up a certain number of 'Rules of Life'.

It is in this way that, without any preconceived intention of doing so, the author of *Man the Unknown* became one of the major forerunners of the new science of rejuvenation.

This science must be based on an extensive knowledge of all the cellular activities, and Carrel had devoted himself to these problems for a long time. Moreover, my personal admiration of his work was anticipated and justified by such men as Metalnikov, Alexander Bogomoletz and Filatov who profited greatly from his teachings. All three of them quote extensively from his works.

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From the point of view of Externalism and Externotherapy—which is what we are mainly concerned with—it would be dishonest not to quote Carrel's recommendations, which form both their basis and their proof. It would be equally dishonest not to show how, why, and in what ways, Alexis Carrel must be regarded as one of the most inspired forerunners of Externotherapy.

From his book, *Man the Unknown*, I have selected a few of the many biological precepts which this work of salvation contains:

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‘Artificial health is not enough for modern man.’

‘Health is much more than the absence of illness.’

‘We must assist the whole to maintain its integrity, instead of intervening in the functioning of each organ.’

‘The progress of medicine will not come from the construction of bigger and better hospitals or bigger and better factories of pharmaceutical products.’

‘The mere administration to the invalid of chemical substances which he needs does not bring him true health. The organs must be made capable of manufacturing, of their own accord, these substances within the body.’

‘The conquest of natural health demands a considerable enlargement of our knowledge of the body and the soul’.

These pronouncements of Dr. Carrel form several of Externotherapy’s points of departure. Externotherapy is engaged upon a struggle, the nature of which is to keep man healthy by reinforcing his natural powers before the diseases of degeneration can appear. It regards the health of the body as a positive richness to be acquired and to be maintained, and it will not have done its duty by man if it merely rids him of his pathological misfortunes. Above all, it cannot conceive of the health of the body apart from the health of the mind; there must be a harmonious functioning of the mental apparatus, which is continually exchanging messages of health or disease, of the joys or the sorrow of living, with the body.

But let us draw even more weapons from Carrel’s biological arsenal for our war against old age. In another work of his, *Reflections upon the Conduct of Life*, we find other statements, as true as they are concise, which also go to form the basis of Externotherapy:

‘Innumerable observations have shown that climate, profession, diet, athleticism, certain intellectual and moral disciplines, etc. . . . make a profound impression upon per-

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sonality. Even variations of a single condition for development such as feeding are enough to produce great changes in animals.'

'The formation of the mind and the body depends on the chemical, physical and psychological conditions of the environment and on physiological habits. The effects of these conditions and habits on the individual's whole being must be studied in a precise manner in relation to every activity of the body and the mind.'

After examining the effects of physiological habits, Carrel gives us a 'directive' that is a golden rule for Externotherapy: 'We must study the effect upon individuals of different types of the duration of sleep, the frequency and quantity of meals, manual labour, physical exercises, extremes of weather, prolonged effort, etc. . . .'

Upon this basis, but carrying it to the highest degree of exactness, Externotherapy has instituted a system of rigid observation of the individual factors relating to each organism and its functioning.

The precepts of Carrel that follow, enjoining study of the nourishment of the glands and research into means of stimulating natural demand, are eminently externalist:

'It would be very much better to re-establish the glandular functions in this way than to inject the patients with hormones.'

'Natural laws differ profoundly from laws made by men.'

'Scientists often make the strange error of observing natural phenomena as if they themselves were outside nature.'

Other fundamental maxims of the new science.

'The human being is not constructed solely to produce and to consume'.

'The mind is inseparable from the blood and the tissues. To develop the body without developing the mind is as absurd as to develop the mind without developing the body.'

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About the 'Rules of Life', Carrel tells us:

'The Rules of Life should indicate to us not only what we ought not to do, but also, and above all, what we ought to do.'

On the doctor's function:

'In the past some old family doctors possessed enough honesty and general knowledge of life to play the part of both spiritual and temporal director.'

On the relations between body and mind:

'The only happiness to which man can attain is that which results from the perfect functioning of his body and his mind, and from the accomplishment of the destiny that has been assigned to him by the order of things.'

'Moral, intellectual and glandular activities are jointly and severally responsible, one to another.'

I have left deliberately to the last, this grave observation of Carrel's:

'In fact, science has not yet brought us one efficacious aid in the conduct of life.'

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Such statements are a witness to the exacting demands and progressive ideas of Alexis Carrel.

It is now the duty of Externotherapy—by utilizing to the full the resources of modern science, which are enormous but still far from being co-ordinated—to fill the gap to which Carrel drew attention and to help every man and every woman to 'realize' themselves within the framework of real life. If, in fighting against growing old with every 'live' and 'natural' means, it finishes by creating a true 'Art of Living' with the aim of achieving youth, stability and the health of the whole by bio-physical and mental self-control, it will have done what it should.

In the light of Alexis Carrel's wisdom and insight, the creed

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of Externotherapy may be expressed as follows: 'We do not believe in any miracles except natural miracles. But we must nevertheless allow these natural miracles to fulfil themselves. We must assist our bodies and our minds, the sources and the beneficiaries of these miracles, to generate them and produce them by their own methods.'

The 'Fighting Tissue', the Enemy of Old Age

We have seen that, on the physiological plane, the foundation of externalist methods is the recognition of the *all-important* part played in the organism by the connective tissue.

This tissue, *which is found immediately beneath the skin, and penetrates into it*, was considered by Metchnikov to be merely a supporting and linking tissue, 'plebeian' tissue wrapping up or replacing a 'noble' tissue.

But . . . the role of the connective tissue is not what Metchnikov thought; it is not what innumerable scientists of today still believe. And a proper assault against old age cannot compromise with such mistaken beliefs!

That is why it is necessary, before I ask you to accept the theories and recommendations of Externotherapy, to explain how later scientists were forced to revise Metchnikov's theories.

Another great Russian biologist, S. Metchnikov, had already expressed certain doubts, and his reasoning led him towards the same conclusions as Bogomoletz.

Who is Metchnikov? The general public and even, I think, most doctors have long been ignorant of the work of this great scientist, who, like his predecessor Metchnikov, was convinced that degeneration and senility were 'pathological' states and, consequently, that it was possible to take action against them.

Metchnikov worked for many years to build his theories upon

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accurate information, and thus to clear the way for 'The Struggle Against Death'.

This last phrase is the title of his principal work, in which he treats, factually, of life and of methods of postponing old age. To Metalnikov, who did not know when he wrote his book of Bogomoletz's discovery of the part played by the connective tissue in the physiological system, progress in the war against old age was already a scientific reality.

Metalnikov's importance was all the greater in that his purely scientific opinions were enriched by general ideas of great human interest. Moreover, the principles that he elaborated have a strange resemblance to the warnings of Alexis Carrel.

He wrote:

'Until victory is final, we must have a united humanity and a single front of scientific research in the battle against death and the enmity of men.'

I would like to emphasize here that, in spite of the demands made on them by the work of research, the great biologists never forget that the ultimate aim of science is the happiness of mankind.

Metalnikov had two fundamental beliefs:

'It is possible to delay old age and death, and science must take a very serious interest in this problem.'

'There are obscure forces hidden in nature, and not yet taken into account, which can be utilized in this struggle.'

'Altogether,' he wrote, 'there are no limits to creative power and the will of man.'

Speaking of old age, he affirmed that 'The variations which occur within the tissues and organs present a question which unfortunately is far from receiving as complete a study as it deserves'.

Occupied with thoughts such as these, he reflected upon Metchnikov's theories concerning the function of the connective

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tissue whose cells, 'invading cells' as he called them, enter in the course of senile degeneration, upon 'a state of super-activity and begin to multiply.'

This is a biological fact that Metchnikov does not explain, although from it he recognized the dominant part played by connective tissue in the process of ageing.

Bogomoletz destroyed Metchnikov's theory by providing the missing explanation, and proving that connective tissue is one of the main channels of nutrition, and at the same time the 'fighting tissue' at war against cellular degeneration.

But already Metchnikov, though still Metchnikov's disciple, had timidly raised the question:

'Why do the connective tissues and phagocytes preserve their strength while other cells lose theirs?'

And, he went on:

'Metchnikov's theory (the celebrated theory of the auto-intoxication of the organism) does not explain why the poisoning first becomes apparent in the specialized cells and does not affect the connective tissues and phagocytes. Why do the latter retain their vital activity while the higher cells begin to degenerate and decay?'

It is clear that Metchnikov, although ignorant of the theories of Bogomoletz, was already beginning to appreciate the all-important role of the connective tissue, its vitality and its fighting power.

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It was Bogomoletz who supplied the answers, with proofs, to Metchnikov's questions.

He elevated the role of the connective tissue to that of source of nourishment for all the other cells, and showed that in the weakening of this tissue lies the cause of old age. He emphasized that it preserves its life forces longer than other tissues, and

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struggles to replace the losses of other cells. By penetrating deeper into the so-called 'higher' tissues, it prolongs their vitality and assures their nutrition, bringing life and strength into the very depths of the other tissues. Finally, by replacing the other cells, it ensures the healthiness of the whole tissue organism.

In his description of the role of the connective tissue in the physiological system, Bogomoletz goes even further and asserts that even in the most serious illnesses it carries out a defensive mission.

'The development of diseases such as syphilis and tuberculosis is very largely determined by the cells of the physiological system of the connective tissue, which resist contagion and contribute towards the destruction of microbes'.

And later on, regarding cancer:

'This tissue develops around the tumour, penetrates into it, and opposes its progress into the surrounding tissues. The cells of the connective tissue destroy the tumour either by phagocytosis or by dissolving the affected cells with their ferments'.

By this example alone, Bogomoletz invalidates Metchnikov's theory that the connective tissue 'invades' and replaces the 'weaker' higher cells.

Cancer cells, we know, are young and extremely powerful, capable of destroying their neighbours, the 'higher cells'.

On the other hand, dozens of years go by with out the connective tissue cells invading their neighbours. Rather do they live in perfect equilibrium with them. The connective tissue intervenes only in the case of cellular danger, or when war has already been declared, as, for instance, against cancerous cells.

That is why Bogomoletz unceasingly maintained that strengthening and stimulating the connective tissue would make the battle against cancer and other diseases more vigorous and more effective.

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'The connective tissue forms a reserve of nutritious substances for the organism. At the same time, it exercises a regulating influence over the metabolic processes.'

He gives an exact explanation of the cause of physiological old age:

'The connective tissue loses its physiological elasticity and then, gradually, all the functions of the organism lose their suppleness and elasticity, and their reactivity diminishes.'

We have already seen that Metalnikov did not confine himself to biological research, but also endeavoured to identify the other causes of ageing. One of them is 'excessive specialization'.

According to Metalnikov, 'The multicellular organism which represents in reality a large and very complicated cellular state is made up of permanent cells, which could, in certain conditions, live and multiply indefinitely. If, nevertheless, the organism perishes and decomposes, the causes of this must be sought not in the cells themselves but in the state of social organization.'

After elaborating his ideas with courage and lucidity, he declared that one of the secrets of ageing was the division of labour and the specialization of work. When a man, all his life, does only one single job (whether physical or intellectual), he must expect the natural aptitude of his cellular organism to become deharmonized. The result of this loss of harmony is to provoke the increase of 'certain' cells and the weakening of others.

He concludes

'The consequence of this loss of harmony are the enfeeblement of the whole organism and a series of varied alterations which lead on to old age and natural death.'

In this theory Metalnikov was expressing in 1937 a point of view similar to that expressed by Alexis Carrel in 1938. Both of them denounced present-day civilization and social life.



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Metalnikov gave advance justification to my own theories that the life of the individual and his resistance to degeneration and senility (of both mind and body) depend very largely upon the greatly varied conditions of daily life; and furthermore, that you cannot fight old age with the present weapons of medicine alone without simultaneously taking into account the whole existence of the body in its environment: nature, social order, habits, laws, traditions, education, religion, everything in fact which makes up 'civilization'.

Finally, in Metalnikov we can discern a certain anxiety, a certain doubt, revealed in the question which he raises about Metchnikov's theory of old age, according to which the microbe growths in the large intestine have a destructive, toxic effect:

'Even if this is the case, the question still arises of why these toxins only have a pernicious effect in old age, and why they do not provoke senile changes during the years of youth when the digestive process functions with no less energy, and the intestine is full of these same noxious bacteria.'

He continues:

'Neither can we understand why the higher elements or specialized cells (of the higher organs) degenerate under the influence of these toxins, while *the connective tissues* and phagocytes *retain their vitality unimpaired?*'

Metalnikov could not answer this question of his, and it was left to Bogomoletz, as we have seen, to provide the answer.

And now I, in my turn, wish to put two additional questions, which seem to me of the greatest importance:

'Why does the connective tissue become an "invading tissue" as orthodox science up to and even since Alexander Bogomoletz claims, when in youth it was merely "a sustaining and bolstering tissue"?''

'If the connective tissue did not invade the weakened cells, would the danger to the organism be even greater?'

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It is fifteen years since these questions were formulated, and it is time that science gave a firm and final answer to them.

If science faces up courageously to the theories of Alexander Bogomoletz, we shall have taken a great step forward along the road that leads to victory over the disease known as 'old age.'

Yes, there can be no doubt that the physiological system of the connective tissue is the key to the struggle against senility and degeneration.

Nature is Continually Making and Re-making Us

'A simple change in the conditions of life (that is to say the suppression of a few conditioned reflexes) is often enough to produce a salutary effect upon the invalid. As we have seen in our experiments, these conditioned reflexes are often capable of protecting the organism against a fatal infection.' —*The Struggle against Death*, by S. Metalnikov.

Professor Pavlov, a great Russian scientist and President of the Russian Academy of Sciences, whose discoveries and works are known throughout the scientific world, proved half a century ago that purely external influences ('external excitations'), whether natural or artificial, have a powerful effect upon the organism by evoking either positive or negative conditioned reflexes.

This discovery provided the first experimental justification and basis for Externotherapy, by establishing that science can influence the vital evolution of the organism by making use of external influences which have nothing to do with medicines and injections.

Pavlov was not directly concerned with old age, but, by living to eighty-eight himself, he provides a striking example of the human organism's impressive ability to pursue stimulating work over a very long period.

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His first scientific works were published in 1874, his last in 1906. Sixty-two years of scientific labours, sixty-two years of mental equilibrium and creative genius.

Pavlov's experiments are of great importance for an understanding of what constitutes the scientific basis of Externotherapy. I must therefore give an outline of his work and of its results which furnish supplementary arguments in support of my theories and methods.

For this I shall quote from Metalnikov's description of the experiments of Pavlov and his very numerous disciples, and then from his description of his own experiments.

But first, a few explanations from a scientific point of view.

All animals have certain 'instinctive reflexes', that is, certain automatic actions in the life of the body: the baby sucks at his mother's breast, a man produces saliva and digestive juices when he takes food, he sneezes, etc.

There are also 'conditioned reflexes' (the name given by Pavlov) which can be provoked by a host of stimuli coming from outside, provoked by man or by nature.

Pavlov and his disciples proved that these 'excitations' can be very different in their nature: mechanical, calorific, electrical, luminous, auditory, visual, etc.

So that this problem may be understood more easily, I shall quote an experiment in artificial immunity that was conducted by Metalnikov and his colleagues.

Twenty-four guinea-pigs were selected, and every day an emulsion of non-virulent microbes was injected into a body cavity, the same in each case. Before the injection was given, the skin around the injection site was either scratched or heated (to a temperature of 131° F.) during the course of a minute. After twenty to twenty-five injections (spaced out over the same number of days) the animals were left in peace for between fifteen and twenty days until the fluid in the

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peritoneal cavity had returned to normal and the microbes had disappeared.

We know that the injection of microbes causes an enormous precipitation of 'defence cells' into the peritoneal fluid; these defence cells are called phagocytes and lymphocytes.

When the rest period was over, the 'external excitation' (the scratching or heating of the skin without injections) was resumed and, as before, the defending phagocytes and lymphocytes were precipitated on to the microbes, which this time did not exist.

In other words the scientists 'cheated' the organism, which reacted in the belief that microbes were being injected at the same time as the skin was being scratched. Millions of 'defence cells' were precipitated to defend the body against the non-existent microbes. Artificial immunity was created by scratching a tissue cavity.

The intention of this experiment was to control the body's aptitude to create active immunity by means of conditional reflexes.

The following is a very well-known experiment:

Pavlov discovered that a dog would secrete gastric juices if a piece of meat was discreetly replaced, at some distance away, by an object of the same colour, and that the secretion was produced in the same manner.

Metalnikov pursued a series of experiments on the problem of defence and immunity, and established—by a similar experiment to that of the guinea-pigs—that animal organisms can be forced to produce specific anti-bodies (against cholera, for example) when injections of cholera bacteria were accompanied over a period of time by scratching or heating.

Other experiments made with auditory stimuli (bells, for example) gave identical results.

After these experiments Metalnikov wrote:

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'The fact that a merely external excitation can abruptly change the leucocyte composition of the blood or increase the production of anti-bodies demonstrates very clearly the part played by the nervous system in immunity reactions.'

This is a tangible and incontestable proof of the role of the nervous system which regulates the most delicate functions of the organism.

'The nervous system acquires a new faculty: exalting the sensitivity of the cells, that is to say, acting in a specific way against a given micro-organism.'

We also find in Metalnikov's work the extraordinary proof that 'conditioned reflexes' can cause the same manifestations as the illness itself. Feelings of pain and discomfort can 'be produced not only under the influence of some natural cause (virus, poisoning, etc.) but also by the action of different stimuli which during the course of the illness have become accidentally associated with it'.

Professor Platonov has described numerous experiments performed in various Russian laboratories which demonstrated that 'the spoken word is a real stimulus which produces the very same reaction as an active material excitation'.

This must be qualified by saying that the spoken word is not a direct stimulus but must be accompanied by a physical excitation (burning, injecting, scratching, etc.).

Metalnikov's book contains many other experiments that are of equal interest to us:

In 1924 Professor Glazer demonstrated that the number of white corpuscles in the blood can be increased not only by nourishment but also by means of a mental influence.

Istomine and Toplitzky brought about a change in the quantity of leucocytes in the blood by suggestion. They proved equally that they could 'create at will in a patient the feeling of hunger or contentment by means of the spoken word'.

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Here are some other notable experiments:

The importance of the use of psycho-therapy in the case of tubercular-pneumonic diseases was demonstrated by Doctor Chisler, who used it with great success in a sanatorium. Professor Platonov also proved that verbal stimulation of the vomiting centre was incontestable, but equally, suggestion became a 'cure' in the case of serious vomiting. Platonov treated forty-two pregnant women suffering from vomiting, and recorded two cases without any result, two cases with partial results, and thirty-eight cures after two or three sessions.

Professor Charcot produced oedema of the arm by verbal suggestion.

In Russia, Professor Podiapsky induced typical skin burns on hypnotized subjects.

Doctor Soumbatov of Tomsk, in Siberia, occasioned disturbances of circulation, oedema, skin eruption, etc., by suggestion.

I hope that the few examples given above will have proved to the reader that 'external excitations' induce conditioned reflexes of the organism, which in its turn develops different reactions in its most delicate functions, and very radical changes. In this way it is possible to cheat the organism, or more accurately the nervous system, which controls all the organic and secretory functions.

Let us now relate the problem to my theories and methods. It becomes quite obvious that during his life man reacts by millions of conditioned reflexes to the excitations of nature which positively and negatively direct and control his body. Under these external influences, certain functions react insufficiently or excessively.

Work, habitat, home environment, climate, food, amusements, sexual life, every aspect of mental and psychological life in fact, completely dominate the body and its functions.

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They are the most powerful ultimate causes of youth, intelligence, health, ability, mental sufferings, and finally, degeneration and premature old age.

The meagre remedies of modern medicine are quite powerless against these important factors of nature and every day life.

If we leave these external factors out of account, we are disregarding the great majority of the factors which rule the life of the organism.

From the very beginning, Externotherapy attempts to reckon with those external factors which can have a decisive effect upon man's vital forces. And those factors can be physical and also purely mental in origin.

How, why and when you grow old depends very largely upon them.

Dying Cells. The Sources of Life

'All human tissue, animal or vegetable, when separated from its organism and preserved in unfavourable though not fatal conditions, undergoes a biochemical re-organization, producing biogenic stimuli of an unspecified nature which, when introduced into a deficient organism, possess the property of stimulating vital reactions.'

Alexis Carrel started out by proving that specimen tissue can live in a perfect 'environment', in experimental apparatus constituting an artificial 'environment'.

But he also proved that a fragment of analogous tissue, joined to a dying tissue, gives the latter new energy, and feeds, revives and regenerates it.

He confirmed the theory of Filatov that 'at the time of the disintegration of cells, substances of a complex composition (Carrel calls them proteoses) react on analogous cells by stimulating their vital functions and their regeneration'.

Bogomoletz gave them the name of 'auto-catalysers', and

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declared that these substances are not hormones. That is, they are not the product of living endocrine glands.

Filatov has gone further. He has studied specimen tissues themselves—not under the best conditions like Carrel, but under the worst, during 'sickness', and he then discovered the presence of substances which are extremely effective in regenerating the life of the whole organism—and not only analogous tissue.

He went on to discover biogenic stimulins, substances which appear in great quantity when the tissue is decaying, attacked or hurt, and is defending itself. These substances, whose composition is still a mystery, but which are the result of decomposition and decay in living matter, are substances of life, sources of vitality, revivifying and militant forces, whose aim is the health, nutrition and regeneration of the cells and the safeguarding of the biochemical state of the secretions.

Filatov has shown that death is, in fact, only the passing from one state of life to another. Energy and vitality abandon the dying cell to continue their life in an extremely live and regenerative substance.

Living matter continues to live after the death of the cells, but it leaves them as a living substance.

The flow of biogenic stimulins is more abundant under the effect of 'supplementary', that is 'artificial', disease, as for example, when the specimen tissues are attacked by cold, X-rays, or ultra-violet rays, traumatisms, etc. In fact, when the corpse of an animal or plant (in earth or on the surface of the earth, in lakes, springs, mud, etc.) decomposes, its biogenic stimulins leave the dead body to return into nature.

That is one of the secrets of the life of our earth and of the vital forces of nature.

It is an undeniable fact, unknown to biologists before Filatov, that dying cells leave after their death biogenic stimulins—substances which are very full of life.

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We do not know—for it is still one of nature's secrets—whether or not these stimulins of Filatov's, and others as yet unknown, are the very same substances which form, or at least stimulate, the new tissues and new living beings which are born into the world.

It is fair to say that these living substances stimulate plant life, which in its turn is used in the food of the animal world. In any case, we may reasonably conclude nowadays that cereals, fruit, vegetables, etc., owe their vitality to the living substances left by other living beings (animals and plants), at the time of their death.

We would be failing in a great duty if, when dealing with the fight against growing old, we did not endeavour to make this important discovery of the Russian professor, V. Filatov, known to the general public—and all the more because our work is based on the role of the 'physiological system of the connective tissue'. Those biogenic stimulins, being extremely powerful substances and of completely natural human origin, can 'rejuvenate' or reinforce the cells or substances enveloping them, and thus 'rejuvenate' all the tissues, cells and organs.

Filatov's discovery therefore, together with the revolutionary discovery of Alexander Bogomoletz (on the role of connective tissue), becomes a powerful factor in the struggle against old age and towards long life.

Like the Bogomoletz serum, the biogenic stimulins of Professor Filatov are not a specific remedy. The servants of science must understand that it is useless to search for specific remedies in the fight against old age. A panacea must be found capable of arresting old age, but the hundreds of compounds, which patch up such and such an organ or such and such a function can never do anything in this direction, because it is necessary to regenerate all the cells at the same time and to stimulate the biochemical metabolism in general in order to preserve the

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original equilibrium. By influencing one function or one particular organ we run the risk of ruining the entire secretory balance of the organism.

It is not possible to stop old age by using synthetic or super-chemical means, nor by the arbitrary stimulation of the organs or the flow of hormones.

It will only be possible to stop old age scientifically when it is possible to assist the organism by the supplementary administration of regenerative substances which are living and vital, or by stimulating the cellular and secretory functions of the organism as a whole, as in the case of the anti-bodies of connective tissue (the Bogomoletz serum).

Biogenic stimulins are at the moment the only known non-specific substances, that is, they are equally efficacious for all kinds of tissue.

The old methods, and particularly the hormonal methods (grafts, implantations, injections, etc.) which are the most powerful of them all, partially regenerate certain functions, but in a way which is not controlled and measured, and is often very arbitrary.

Filatov has discovered the part played by powerful substances which appear in the tissues of all beings from man down to plant life, when these tissues are removed from the body and submitted to conditions of sickness.

Being away from the body such a tissue should, properly speaking, die. It is in a state prior to death, but nature has given it the power to fight death and to defend itself against disease. That is the official thesis nowadays, but we believe that the flow of the substances which it contains is a prime factor of the state prior to death, and that even without disease these substances appear during the decomposition of tissues.

A very small fragment of human tissue implanted under the skin spreads these stimulins, which work through the connective

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tissue and through the blood in all the tissues and in all the cells, and help to establish metabolic equilibrium.

But Filatov has gone even further: after evolving in the simplest way the method of treatment by biogenic stimulins he applied the technique of using a woman's placenta—a tissue of the human animal of which all the living powers and qualities have been eliminated by the organism in a natural way.

Nowadays the sterilized placenta provides thousands of doctors with extracts or fragments of 'diseased' tissue.

Filatov tells us that the stimulins resist heat, and keep their quality after having been heated up to 120° C. (for one hour). They are soluble in water, and distil in water vapour; they are neither albumins nor ferments, and they are not adversely affected by albumin precipitation; they remain constant.

Filatov adds that 'biogenic stimulins' are not a substance, but the complex association of different substances.

Nor did he stop there. He widened the scope of his researches, deposit in and succeeded in establishing that stimulins exist in nature itself, wherever an animal body, or even a dead autumn leaf, decomposes. For us, these powerful substances are in fact a positive and integral force in the life of nature.

He found the same stimulins in a woman's placenta, in the mud of marshes and lakes, in *Humus*, in black soil, in yellow autumnal leaves and even in manure.

Thus nature, our earth and the waters upon it, hide the results of the decay of all dead creatures, both of animal and of plant life. Streams pass through beds deep in the earth and cross subterranean lakes where nature has left its living, powerful forces.

These waters and mud-springs which have a heating effect, do not heal only by means of the chemical components which analysis finds in them, but also by means of the living substances they contain: biogenic stimulins and others.

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Filatov's method is known in medicine as 'tissular therapy'. This name is much too modest for the size of the problem which it has solved—or aims at solving.

In Externotherapy and in our Externes we have taken the discoveries of Filatov as much into account as possible.

To conclude this brief exposition of Filatov's great discovery, I would like to emphasize again that it supplies scientific proof that the human organism, its tissues, cells and secretions, possesses powerful forces for the preservation of the life and vigour of a living being.

To anybody who claims that the artificial means of patching up such and such an organ or function by specific remedies is the only way to health, we can now say in the name of Filatov that he is mistaken. It is even possible, I repeat, that the natural powers of the organism may be depleted by the application of specific remedies. (I am speaking of degenerative diseases.)

When the requirements of the 'health of the whole' are taken into account, when the direct stimuli of the organism's vital and living energy are found, then the true medicine of the future will be discovered. But that will not be possible unless one considers each case as an individual, as a biological whole, and also considers the environment in which it lives.

The discoveries of Bogomoletz, and those of Filatov, in this province, can revolutionize science.

Finally, I want to quote a sentence of the Italian Professor G. Tallarico. Speaking of Filatov's biogenic stimulins he writes: 'Their effect makes itself felt on the organism as a whole and not on the pathogenic agent, the micro-organism, which means that they act not on what causes the disease, but on what is diseased, activating its vital potential and increasing its capacity for resistance, thus stimulating the power of healing and regeneration.'

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So much for the diseased. Later, concerning long life and old age Tallarico writes, 'Professor Filatov would probably have found what others have so long and vainly sought in the blood, the lymph, the vitamins, the liver and the heart, without ever discovering it: the secret of putting off old age'.

The example of Filatov's discovery confirms that science already possesses important discoveries for the fight against degenerative diseases and growing old.

The dream of Alexis Carrel and Metalnikov of substituting a natural medicine for the artificial medicine of today, is becoming reality.

THE BODY AND ITS FATE

Our Destiny is, Above All, 'Cellular'

I CANNOT urge the reader too strongly to take great care in reading this chapter, which is devoted to the structure and life of the cell—and also its mysteries.

Humanity has undoubtedly still thousands of years to live before it can fathom the secret of nature, which is none other than *the secret of life*. Life, it is true, is pleased to hide it from us, and sometimes it even seems that, despite the vast and potent means of knowledge already at our disposal, certain mysteries become more profound the more swiftly science advances.

Biology is entrusted (everyone agrees on this) with one of the largest and most difficult regions of nature's mystery—the human body.

Biology sees the body as 'Union of States', themselves composed of diverse peoples and different races of cells, evolving and collaborating in a living entity. These peoples and races, these countless citizens, live, work and die in conditions of absolute solidarity inside the organism. Cells and tissues feed themselves and co-operate in order that the human body shall live.

These little living beings which we call cells—and which, joined together, form our tissues—conceal in their plasma and nucleus the great secret which we are seeking.

Our curiosity, however great—and how legitimate it is!—

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ought not to be merely speculative. It must be thoroughly understood that it has a practical aim in view. We must admit without false modesty that the future of our species depends on the possibilities of living in the best possible biological conditions. I am not speaking of being able to move faster, to destroy oneself more swiftly and more fundamentally, to enjoy pleasures more easily, or to wear oneself out.

No. I am thinking here of the means of safeguarding life itself, this wonderful journey which lasts only a handful of years, only about a millionth of a second of the life of the universe.

But this millionth of a second of the life of the universe is worth living. If the Godhead exists, or if Nature reasons, our human strivings must seem to them like those of the ants. What does it matter? Ants are skilful in organizing their life. Like theirs, our means are limited: but, unlike theirs, ours are capable of being enlarged and improved. In our ant's nest we are kings, and our royal state is only limited by our ignorance, to a greater or lesser extent, of the ultimate realities of the living matter which governs our own existence.

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So it is essential that man should know and never forget if he wishes to maintain his natural defences, that he is a living entity containing milliards of other lives—the cells of his body. On their life depends his, but their life depends on their own possibilities for continuing to live. And it is the same for everything around him, both animal and plant life.

The cells receive food along paths built by nature, the paths of respiration, digestion and of the skin. But then, from one day to the next, each new step in the progress of science proves to us that the life of our body is not only limited to the functions of feeding and breathing. It would be quite ridiculous to claim

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nowadays that eating certain food or breathing a certain air ought to be sufficient for us to live happy and young.

A better defensive organization of our existence depends on every new step we take along the path of discovery of the realities of life and the causes of cellular vitality. For it is in the secret of the life of cells that the secret of our own life is to be found.

Let us watch the cells living in the laboratory of Dr. Alexis Carrel:

'Inside the organism, the cells behave like little water creatures plunged into a dark warm environment . . .'

'Their structure and their functions are determined by the physical, physico-chemical and chemical state of the liquid surrounding them.'

'The cells form societies, which we call the tissues and the organs.'

'It is these functional characteristics, and not only their anatomical characteristics, which make them capable of building the living organism. In spite of its smallness, each cell is a very complicated organism.'

'Each type (of cell) has its own inherent properties, which it keeps even when it has been separated from the body for several years.'

Carrel is here referring to the results of his famous experiments in keeping alive the heart tissue of a chicken embryo. And he goes on to contemplate the extraordinary movements of the cellular world; he savours, with an intense intellectual appetite, the life of these 'water creatures', these 'infinitely small things', of which we are composed and without which we are nothing—the cells.

'They associate in dense masses, whose organization is governed by the structural and functional needs of the whole.'

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'The apparent complexity of living cells is already very great; their actual complexity is still greater.'

But cells live in an environment. Carrel conjure up this environment in a few lines, which show that he has a conception of the cellular universe which is much more than biological:

'The internal environment is part of the tissues, and cannot be separated from them. Without it, the anatomical elements would cease to exist. All the manifestations of the life of organs and nerve centres, our thoughts and affections, the cruelty, the ugliness and the beauty of the universe, its very existence, depend on the physico-chemical state of the environment.'

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Everyone knows that cells multiply by continually dividing into two identical cells. The cells, and the living substances in which they 'swim', are continually regenerated throughout our bodily existence. But at the same time the cells, and with them the tissues, degenerate and their vitality weakens. The organic functions are weakened in their turn, and the defence of the organs and tissues diminishes. This is the approach of old age.

All the groups of cells and the elements of which they are composed are in a state of perpetual movement which does not even stop at the moment of death.

Cells have always been divided into higher and lower cells. This idea is false. All the cells and all the tissues are of enormous importance. The body as a whole is strictly dependent on the life of all the cellular tissues.

Cells have also been divided into mobile cells and fixed cells. This is not true either. The truth is that the first are displaced more quickly and the second more slowly, within the limits of their functions and roles.

We know that there exist uni-cellular animals, that is, com-

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posed of only one cell (infusoria). They reproduce by dividing into two. They mate by each yielding one half of its nucleus, but these two halves end up by joining together, and so a new cell is formed. The infusoria then break away, and continue to live separately, multiplying by dividing.

To observe the life of a uni-cellular organism is a very complicated task for the biologist, because, for an organism of this kind, the environment is nature itself. One can compare its life with that of the cells inside a living body, but the mating of similar cells inside the body does not occur.

Biologists did not at first know what the significance of this was, because though this act resembles the sexual act, the division of each cell is the only way in which the species reproduces itself. It was the French scientist Maupas who established that the act of mating is necessary for the vitality of the species. Without this act, the infusoria would degenerate in the space of a few generations.

The secret of the gradual degeneration, the ageing and death of unicellular animals is thus discovered: it is mating which engenders the biological forces which are indispensable for procreation by dividing.

Metalnikov, coming after many others, also concentrated on this problem. In his book he discloses that he succeeded in keeping infusoria for twenty-two years and two months without mating by separating the cells immediately after their division into two.

In return, Metalnikov furnished the infusoria with the necessary artificial environment: food, temperature, etc. During the twenty-two years, he sometimes noticed a drop in the curve of multiplication, but in every case an unforsecable reason for this drop in the curve was found in the artificial environment (laboratory test tubes, temperature, humidity, etc.).

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It would take too long to give a detailed description of this extraordinary experiment, but the conclusion is perfectly clear and precise:

‘It is necessary to take into account the slightest influences—they are often imperceptible—and the exterior conditions’, writes Metalnikov.

In other words, an infusorium, even without any mating, when it receives new vital forces, can live like a cell similar to other cells, immortally, and can reproduce unceasingly if its living conditions, its environment and the influences which act on it, are maintained.

However, groups of human cells, when living together, depend not only on their own existence, but also on that of neighbouring groups. What is more, these cells are in compact groups, as Metalnikov noticed, and take nothing directly from outside. Finally, their ‘food’ and their biochemical state are absolutely identical inside the body in the same tissue. Thus mating is not a biological necessity for them.

Let us add to this our theory that, within the entity of the body, all the cells are attacked and weakened by influences coming from outside which systematically annihilate them, while Metalnikov’s cells (infusoria), as well as Carrel’s heart tissue of a chicken embryo, lived in test tubes and an artificial environment, protected from all harmful outside influences.

From the example of the infusoria we can see why it is impossible for cells in a living body to be immortal. But, knowing the true reasons for this impossibility, we still have the right, indeed an even better right, to open battle for the improvement of man’s environment, which is the cause of the gradual degeneration of his cells.

The factors and influences which ‘externalism’ utilizes for this battle, are the different elements of this improved environment.

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Metalnikov, quoting the calculations made by Woodruff, writes:

'In a few hundred years, if the necessary conditions for its reproduction were supplied, a single living cell could multiply to fill the whole visible universe, including the sun and the planets.'

He explains:

'Actually, the reproduction of living cells is limited by insufficient food, by temperature, by unfavourable conditions of environment, and by the mass of other organisms which feed on animal and plant cells.'

The problem is clear, and we can see the importance of the harmful influences and factors which, at least in the case of man, should be taken into consideration and carefully studied if we are to preserve the vital forces of the cells of which our body is composed.

Alexis Carrel has proved that an artificial environment allows cells to live almost indefinitely, and to multiply regularly.

Metalnikov for his part has established by his experiments on infusoria that without additional energy gained from mating the unicellular body can also multiply in the favourable conditions of an artificial environment.

Thus the secret of the vitality of cells obviously rests in the condition of both the internal and the external environment of the body.

But millions of life-years of cells in a harmful environment (nature) have created a very special situation; these harmful factors have become necessary—and in fact an indispensable stimulus—to the fighting power and vitality of the cells.

The cells react, and defend themselves against all outside attacks, but gradually they weaken and degenerate.

I do not wish to say that we are seeking the impossible—the perfect environment—because we already know that it would

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be very depressing in the long run for the human species to live in the lap of nature without conflict or compulsion.

But we believe that we can reduce these conflicts by ordering these environments more rationally, and by putting the body and its organs in the best possible condition for the fight. The stake being, as we know, the postponement of degeneration and death.

Man, like every other animal, must die. But he can aspire to undergo less hardship and to live longer.

Metalnikov reckons that we have strong reasons for believing that the nervous system governs the multiplication of the cells. This nervous system is the depository of our mind and soul, which in their turn share in the gradual degeneration and ageing of our body.

Therefore we cannot neglect the mind and its energies in our battle for long life and for a longer youth. Psychological forces can furnish the cells with additional means of defence.

This has been a long and difficult section, but if in my work I am to ask for the help of men and women, and if I believe that collaboration between the scientist and doctor, on the one hand, and the patient on the other hand, is the only means of fighting old age, then this collaboration will be much easier if my readers are familiar with certain ideas which constitute the foundations of our theories and methods.

Moreover, how is it possible to collaborate, if one of the parties does not know the most important elements of the machinery which we are seeking to save from destruction?

We Are As Old As Our Skin

Before we prove that these seven words express one of the most profound truths of biology, it is obvious that we are first

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of all expressing—still in these seven words—a very important psychological and social truth.

For everybody to exist it is necessary first of all to possess and present a certain external state, a 'surface' whose appearance is more or less light or dark, brilliant or dull, smooth or rough, healthy or unhealthy, and finally more or less pleasant to look upon.

This surface is the two square yards—approximately—of our skin, and whoever sets eyes on us, whether it is the man next door or a genius, a doctor or a layman, an artist or an artisan, or a woman—beautiful or ugly, young or old—sees nothing of us but our skin.

Also, in a world where the battle for existence grows fiercer every day, where people run faster and faster, and take less and less time to probe into us, this surface, this external appearance, in a word this skin, with its lies and its truths (especially its truths if one can read it well!) gains a first rate importance.

An importance from a psychological point of view, for in most people, especially women, self-confidence and the zest for conquest and even for living are lost in direct proportion with the appearance of the marks of growing old, and these marks are written first of all on the skin. They are written there when the functioning of the organs is normal and free from any manifestation of morbidity.

Also, there are very few people—even amongst those least inclined to coquetry—who do not set a great importance on their appearance, and psychological inferiority is often bound up with 'physico-external' inferiority.

An importance from the social point of view as well: human relationships, whether they are sentimental, sexual, commercial, social, diplomatic, etc., are conditioned more or less consciously by external appearances, which are fashioned by the skin, including many facial expressions.

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So it is fair to say that for others, and also for ourselves, that 'we are as old as our skin'.

But it is also true that this psychological and social truth, which is entirely relative, is even beginning to appear to the eyes of modern science as a biological truth, that is, as a sort of 'absolute' truth of the organism.

External appearance cannot be held to be a simple appearance. It translates profound realities, alternately physiological and psychological. If we are expert at deciphering this complicated, chequered and lively 'text', which is the skin, we have the right to say, this time in the name of the strictest science, that 'we are as old as our skin'.

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The age of our skin we have both *apparently* and *in fact*: that is one of the truths, at the same time essential and practical, which inspire Externalism, and marks its path.

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The Externotherapist (it is just for this reason that he has become one) marvels and rebels in having to state that science has always neglected the external state of man. Science indeed has only scorn for 'appearances' as appearances. In biology, science has therefore set itself to a detailed study of the depths of the organism. But our poor skin, which was there in direct reach of hand and eye, has been engulfed in the scorn which falls on everything which is not to do with the 'depths'.

The truth is that the skin deserves neither scorn nor neglect from science. The reason is very simple: *it is a principal organ*.

That is why (there is no need to conceal it) I hesitated for a long time before starting on this section. At first, my intention was to give a detailed scientific study of the skin. But having decided to avoid anything which would be too difficult or

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technical, I limited myself to two of the most important problems within the framework of the fight against growing old:

1. The different parts played by the skin in the life of man: physiological, medical and psychological
2. The skin as a means of therapy

Externotherapy considers one of its essential missions to be the promotion of the skin to the rank (its natural rank) of top-ranking organ in the bio-psychology of the human individual. Although it is only a surface, the part played by this surface in the gradual degeneration which threatens us is immense, as also in the regeneration for which we can first hope, and which we can then undertake.

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I have said to what an extent I consider Alexis Carrel as one of the most profoundly lucid and human of the precursors of Externotherapy. (The reader can see that I do not refrain from quoting him often.) So it is not surprising that from the pen of this master of the laboratory, in *Man, the Unknown*, should come these definitions and descriptions of the skin, which seem to me to be conclusive:

‘. . . Through its outer surface, it is exposed to light, wind, humidity, drought, heat and cold. Through its inner surface, it is in contact with a warm watery world, shut off from the light, where the cells of the tissues and of the organs live like marine animals. In spite of its thinness, it effectively protects the internal environment from the unceasing variations of the cosmic environment.’

‘It (the skin) is hard-wearing, because it is composed of several layers of cells which are ceaselessly reproducing.’

‘The skin is thus a frontier, almost perfectly defended, of a

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closed world. Through it the body comes into contact with everything in its environment.'

'We do not know about the things which do not act upon the nerve endings on the surface of our body. That is why we cannot perceive cosmic rays, even though they go right through us.'

'The quality of the individual partly depends on that of his surface (the skin). For the brain is formed by the constant messages which come to it from the external environment. Also we must be careful not to alter lightly the state of our envelope by our living habits. For example, we do not know precisely what is the effect of exposing the surface of our body to the sun.'

'The skin and its dependants act as a careful guardian to us. They allow certain things of the physical and psychological worlds to come into us, and they exclude others. They are the ever-open door, which is nevertheless watched over, to our central nervous system.'

'Even a superficial burn, if it covers a large part of the skin, brings death.'

'It achieves the feat of being at the same time an open and a closed frontier.'

It is because I have studied and experimented for a long time on this 'wonder' that in my turn I come to make this double affirmation:

Externalism is based on the certain knowledge that the outer layer of our body plays a much more important role than people have believed up to the present, as much from the biological as from the medico-physical point of view.

The skin must be considered not only as a defensive shell for the whole organism, but also as an important biological, physiological and psychological factor in living nature.

And, indeed, it protects the so-called 'noble' organs, and the

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tissues of the body. It is the direct route into the depths of the organism for the regular and natural penetration of messages from outside, and of all influences both positive and negative.

The permeability of the skin has been proved. And it can now be considered as an organ just as important as the most important organs, the only difference being that it is an organ which is visible, easily accessible and directly controllable.

And we must add this:

The ageing of our skin is the first and most visible sign, not only of old age, but also of unhealthy conditions of internal organs, and even of the psychological condition. The skin reacts not only to all the changes, to which the other organs are subject, but also to all attacks made from outside. It feels, suffers and defends itself.

The time has come to devote very special attention to this skin, which has not waited for our permission to assume a very influential role in our immediate and future destiny. It takes in, and absorbs in bulk, rays, dust substances and micro-organisms, some of which help us to live, but others drive us to an earlier death. Because it is our means of contact with the outside physical world, it gathers up all its influences, the bad ones more often than the good.

I have held to this reasoning, which is the key to the fight against old age according to my method: if bad can pass and penetrate deeply into the most important organs, good can also pass. We can pass through the skin both the good and the bad.

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The skin is one of the entrances to the organism, but it is also a filter.

The Externalist should reason like this: forces of life exist in nature. Why not collect them and treat them so that they can be absorbed by the skin (medical Externotherapy). And also,

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why not select them and direct them towards the vital organs of the body? (natural Externotherapy).

When, nowadays, one considers the problems of mysterious living substances, like Filatov's biogenic stimulins, one wonders if the living factors (even the large molecules which do not penetrate the skin) cannot, thanks to recent discoveries, be put into a condition in which they can penetrate the skin, which will absorb them in mass, regularly and naturally.

It remains for medical science, and all the other sciences connected with it, to find these substances and stimulants and to make them absorbable. As I said before, it is now acceptable to regard the skin itself as an endocrine gland; the existence of functional relationships between all the endocrine glands allows the discharge, from the skin, of chemical messengers which excite the different endocrinal changes, modify the metabolism, and influence the secretory condition of the cells. Finally, the pituitary, the main endocrine gland, centralizes all the endocrinal stimuli and transmits a balance to the nervous system. Consequently, there is an inevitable change in the mental state, and this actually justifies my theory of ageing as a process that is at once organic and mental.

The saying, 'we are as old as our skin' only completes the now famous sentence of Alexander Bogomoletz: 'We are as old as our connective tissue'.

I would quote Dr. Raymond Maréchal of Brussels who, having applied Bogomoletz's serum, stated:

' . . . as to the external appearance, even if the wrinkles do not disappear, the face becomes smoother and more youthful, and the hair regains its colour. In short, the impression is that the rate of growing old is slowed down and even that signs of youth appear.'

It is by choosing the skin as the medium of stimulation, and by taking into account the possibility of direct stimulation of the

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derma that I have established my methods of Externotherapy.

My methods aim at accomplishing two things:

1. Putting the skin in a condition of preparation;
2. Making the skin absorb substances which can fill the double role of influencing cells locally, and of stimulating other deeply-seated cells through the network both of the endocrine system and the physiological system of connective tissue.

Consequently the structure of the skin is of fundamental importance.

Although it is not necessary to know the names of the different layers of the epidermis, it is important to remember that the dermis which lies under the epidermis is made up of connective tissue, that tissue which Bogomoletz called 'the root of the organism'. It is the first layer of our organism. It insures a direct and permanent contact between the latter and the outside world. Its executive agents are the capillaries and the nerves, vital elements in every living organism.

All wounds, skin grazes, etc., are opposed by the action of the connective tissue of the dermis.

The biochemical state, nutrition and metabolic capacity of the cells of the dermal tissue, determine the state of the skin. The skin breathes, and this breathing is absolutely necessary.

Thus, the skin breathes, it absorbs and it filters.

If the skin is prepared according to our methods, by putting it into a condition of greatest possible absorption, it can be forced to absorb stimulant elements, that is, elements which have a positive effect on the organism.

Here we must note in this connection, that the skin of women is more permeable than that of men.

Finally, it is very important to point out that the skin is more acid than the blood. This super-acidity insures its power of

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destroying micro-organisms. The decrease of this acidity by the use of different substances said to be necessary for hygiene and beauty must be avoided. This applies equally to soaps; their excessive use decreases the precious acidity.

Finally, the skin must not become dehydrated, that is, it must retain its water. The skin of old men—dried up skin—has lost too much water, or, more scientifically, 'the cells have lost their capacity for retaining water.'

One factor hinders the elimination of water and that is sebum (a grease secreted by the sebaceous glands of the skin). Sebum stops the evaporation of water, and hence the drying up of the skin.

To complete this weighing up of the extreme importance of the skin, I must emphasize that micro-organisms and viruses penetrate into the organism through the following channels:

1. With food, through the mouth
2. Through the respiratory channels and the mucous membranes of the eyes, the throat and the nose
3. Through the pores of the skin
4. Through insect bites

These indications, which are not nowadays disputed, oblige us to attach a greater importance to the skin than has ever been accorded to it before.

Our unfortunate skin, do not forget, is rubbed in an arbitrary way, and mistreated with all manner of substances, often applied to it without thought for the possible consequences of this *carelessness*.

Medicine and science should demand the exercise of strict control in the use of all so-called hygienic, cosmetic and aesthetic remedies.

Unfortunately, science has not only neglected such control, but has turned its back on all the systematic investigations

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which should be conducted in connection with all substances applied to the skin, the colour of materials, the liquids used to wash linen, etc.

No one should overlook, or simply forget, that nowadays hundreds of substances are considered capable of provoking the advent of cancer from outside.

In any case, innumerable eczemas are due to various external causes. How much biochemical devastation has been caused in the life of our cells by the arbitrary and untoward penetration of all sorts of substances into our organism through the skin!

Sooner or later, science must turn its attention to these problems. It is an enormous task to which many chemists, doctors, physiologists, biologists, etc., must devote themselves.

In conclusion, I would once more repeat that, to apply my methods, the skin must be treated as a 'means of entrance', and for my present and future work as a very important organ connected with the different endocrine glands by metabolism. And in every way, the skin remains the ever-visible screen on which is projected the slow or quick film of our growing old.

For all these reasons, it is, with the connective tissue, the great protagonist of the fight against physiological and psychological degeneration.

I spoke just now of a film. I could call the skin the great film star of Externotherapy. It is, and it must be, if we do not shut our eyes to a whole series of particularly striking examples.

First let us take a medico-legal example. The newspapers tell us that the bodies of persons who were victims of arsenic poisoning are sometimes dug up. Now science today recognizes post-mortem impregnation, that is, the absorption by any body of the arsenic in the earth of certain cemeteries. In this case, absolutely the same proportion of arsenic is found in all parts of the body and in all the tissues of the body. Absorbed

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through the skin, the arsenic is sufficient to impregnate all the tissue layers.

And it must be noted in this regard that arsenic, when it has been absorbed through the mouth, is found especially in the liver, the kidneys or in the parts of the body surrounding the intestines.

The conclusion to be drawn from this double statement is obvious: penetration through the skin is the most certain, the most regular and the most general.

That is a slightly macabre example. Here is another :

We know that the ancient Egyptians preserved their corpses in the form of mummies. To achieve this result, they plunged the dead bodies, before embalming them, into a bath containing a natural carbonate of soda found in the lakes of the Upper Nile.

The secret of the preservation of the mummies therefore consists in the penetration of preservative substances through the skin of the body to the different tissues. Don't forget that the skin still lives and that the cells still multiply for several days after death.

Let me now take an example from a contemporary problem, the one we are concerned with here, that of longevity.

The famous Russian biologist, Olga Lepeshinskaya, declared that one of the most effective ways of regenerating human cells is the use of simple bicarbonate of soda. She therefore recommended for the direct and systematic regeneration of the biochemical condition of all the cells, hydrotherapy with a bicarbonate of soda base, which activates cellular metabolism. This therapy can only be justified by the skin's enormous capacity for absorption.

Let us conclude with one of the most curious of recent news items: a worker was bitten by a rattlesnake, a very poisonous variety, and it was the snake that died.

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The explanation was that the worker, employed in a factory where he was constantly handling sodium cyanide, was impregnated with this product throughout his whole organism, through his skin.

In other words, a strong poison, when it penetrates slowly through the skin, does not always kill a man.

On the other hand, it can strike him down if it passes along another channel, even in a very small quantity.

And history supports the news item: the poisoned gloves of the Borgias (or the art of killing people through the skin) are remembered by everyone.

Externotherapy and 'Hereditary Diseases'

I cannot avoid raising the problem of heredity in this book. I feel it is necessary to give some information to readers who may believe themselves threatened by hereditary diseases, because their doctors have explained their morbid condition too easily and not always correctly.

I would also like to make clear to what extent Externotherapy takes the phenomenon of heredity into account.

The problem of heredity is still very mysterious, even in the eyes of science, and we must be careful not to exaggerate its importance when tackling this problem of the battle against physiological weakness, disease and age.

From the point of view of Externalism, heredity is just one of the indications which Externodiagnosis and Externotherapy take into account. It is the individual himself and the evolution of his life since birth which remain the principal factors in diagnosis, in the decisions to be taken and the treatments to be given.

The problem must be divided into two parts, which are,

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unfortunately, often opposed and often spring from different sources:

1. Heredity from a biological point of view
2. Heredity from a medical point of view

Biology and medical science approach the method of treating heredity differently. Biology can and should only approach this problem in an absolutely objective way. It cannot be influenced by the examples of everyday life, or by the practical necessities of stating a diagnosis or applying treatment. It cannot take into consideration certain examples quoted by doctors, especially for example the case of three heads of three generations who all died of pneumonia before the age of forty.

A leading French doctor has made the following statement in order to prove 'heredity in sequence': 'Some motors are made to run for 1,000 miles, and some can go twice as far'.

A biologist will never accept this sort of comparison between dead matter and cellular matter. He will never agree that the example of the three heads of the family who died of the same disease before they were forty proves that age and death are hereditary.

The same applies to the problem of longevity. It makes a great impression to quote families of 'octogenarians' and 'non-octogenarians', but again these examples are not proofs.

For biologists, scientific conclusions based on random examples are invalid.

In the same arbitrary way, longevity is connected with the age at which a given individual attains maturity, and hasty conclusions are drawn from the interdependence of these two factors. Some people cite black people who mature at the age of seventeen, and die younger than white people.

(Even this is false, because negroes living in the United States, that is, in American climatic conditions and civilization, do not

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die young, even if they mature at an earlier age than the whites.)

In the light of contemporary science, biologists accept the fact that embryonic substances transmit individual qualities of the organism to descendants, and that these substances can constantly be regenerated in a young body, even while preserving their hereditary qualities. These qualities, these atavistic phenomena, are still good for transmission after hundreds of years and, as Bogomoletz says: 'The life of embryonic substances is measured in millions of years.'

But biologists cannot agree, not at least at present, that positive and negative qualities are transmitted as a matter of course from father to son, and with them, defence mechanisms, immunity, resistance, character and psychic atavism, in the same way as the organic qualities themselves.

It is dangerous to claim that if anyone has a low resistance to the micro-organisms of such and such a disease, this can be explained by his heredity. It largely depends not only on his embryonic past but also, and especially, on the course of his life since birth.

It is true that the organism itself is capable of acquiring a specific capacity of immunity against a certain disease, but it is equally possible—although this cannot be proved—that immunity may have a hereditary character, that is, it may be the result of a fight against this disease which was put up by the organisms of the ancestors.

In this way, an individual can 'inherit immunity' to a disease which has actually killed his ancestors.

So the problem should not imply acceptance of a set of hypotheses which have not yet been proved.

To conclude, while not contesting hereditary immunity, or hereditary weaknesses and diseases, I consider the problem of heredity is still more or less unsolved.

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If we are to make any progress in the battle against degeneration, we must take the individual first as he was born, then as he is, with his biological and physiological qualities and defects, and consider him as an independent entity.

Externotherapy, although it has no intention of neglecting hereditary data, refuses to build diagnosis on them, preferring to use the direct and individual indications which can be found in the organic life of each individual since his birth.

How Our Body Protects Itself: Immunity and Adaptation

After this last section on heredity, I could be accused of 'biological inconsistency' if I do not mention immunity, that is, the particular aptitude of every individual to defend himself against disease.

This astonishing aptitude is one of the powers at the disposal of the organism to ward off the attacks released against it in successive waves by the outside world.

In the life of an individual, immunity is a much more important factor than the more or less hypothetical hereditary factors, which should not be a major clue on which to base the diagnosis of illnesses, especially when it is a question of the battle against old age.

Immunization power varies considerably from one individual to another, and it is very difficult to evaluate the degree of self-defence acquired. We must also remember that if someone enjoys a certain degree of immunity with regard to certain diseases, that will by no means guarantee him against an untimely old age and degeneration. On the contrary, the organism may wear itself out in acquiring immunity.

It is very difficult to know, therefore, if an advanced degree

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of immunity does or does not indicate that the organism is in a better condition from the biological point of view.

On the other hand it is evident that apart from immunity from infectious diseases, man can possess a certain immunity from other non-infectious diseases and from various morbid conditions. Some individuals and sometimes entire races, can acquire a certain immunity, although very relative, from the different 'negative' influences of nature, but those individuals who have a remarkable resistance to certain forces after a change of country and climate, appear on the other hand to be more susceptible to other natural influences to which their organism is subjected.

So this is an extremely complicated problem. We can, however, state that if immunity and adaptation are phenomena which follow naturally and inevitably a move or a change in the way of life, it would be sufficient to organize these moves and changes in a rational way, to produce a series of positive results in the order of conquest of health and youth.

In Externotherapy, detailed information about a man's birth, behaviour and way of life must all be taken into consideration in establishing every diagnosis.

This information must not be superficial, but should be drawn from self-observations (Externo-type record) about the different physico-psychological reactions of the man in his everyday life, his method of defending himself against diseases and of resisting different external influences. In this way we can enlarge the idea of immunity, which is defined primarily as the whole of the individual's methods of defending himself against diseases, and say that his double immunity, natural and acquired, must constitute a very important factor in the maximum cellular and glandular capacity for defence against all the destructive influences of nature.

It is not part of my task to talk about infectious diseases.

In this province medicine has made enormous progress since the time of Pasteur, but in the case of degenerative diseases the situation is far from being the same. This goes further than the problem of immunity, and we are dealing here with a factor which is better known as adaptation, as in fact Alexis Carrel calls it.

Our cells, secretions, physiological functions and biological forces have a very great capacity for adaptation, even when the degenerative disease has already taken good hold and its ravages have begun.

Here are some quotations which prove that these are not just visionary ideas:—

Alexis Carrel writes:

‘ . . . In degenerative diseases, such as arteriosclerosis, myocarditis, nephritis or diabetes, the adaptive functions are also at work. The physiological processes are modified in the way best adapted to the survival of the organism.’

So much for the degenerative diseases. But Alexis Carrel has written in *Man, the Unknown*, a chapter specially devoted to ‘extra-organic adaptation and adaptation to the physical conditions of environment’. I will quote a few passages, which in their wonderful clarity can be considered as one of the bases of Externotherapy (which puts me, in this connection, among Dr. Carrel’s disciples). The title of this chapter is itself significant, since it shows that adaptation is possible in the face of external influences.

Carrel maintains that:

‘In extra-organic adaptation, the body adjusts its internal condition according to the variations in its environment.’

‘So we fight against cold, as well as against heat, by modifications in our nerves, circulation and nutrition throughout the whole body.’

‘We adapt ourselves to all stimuli coming from the outside

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world even when their violence, or feebleness, strike too hard, or not hard enough, against the nerve endings of the sensory organs.'

'The skin opposes the penetration of light rays by the production of pigment.'

On the same subject, Carrel writes these very important lines:

'Sometimes light which is too strong leads in the long run to a diminution in sensibility and intelligence.'

'In addition to light rays the central nervous system receives the most varied stimuli from the cosmic world.'

He finishes this chapter with the following statement:

'It is strange that we can adapt ourselves without discomfort to most of the conditions of modern life, but this adaptation provokes organic and mental changes which constitute a real deterioration in the individual.'

I do not wish to add anything to these ideas, except to repeat once more that for us these statements should not remain theoretical; on the contrary, we must as far as possible furnish our body with reinforcements for its defence against adverse factors, and lighten the work of our organism, even if this latter adapts itself to such and such a negative influence.

We cannot change either the nature or the process and rhythm of contemporary life. What we can do however is to regulate the behaviour of an organism, by taking into account the different influences to which it is subject in all circumstances, and by fixing 'rules', or biological laws, to follow in the interests of the organism.

One thing is certain: the organism which adapts itself to too many opposing factors ends by using up its biological energy.

Since it is so necessary to safeguard these energies, science should try to help the organism and every individual should try to order and judge his behaviour so as to acquire the maximum number of immunities and the greatest possible power of adaptation by the easiest means.

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The conclusion is obvious: the main causes, among others, of growing old lie in the exhaustion of vital energies which the organism undergoes in immunizing itself and adapting itself, even though it may be true to say that, to a certain extent, harmful factors call forth a useful aggressiveness and develop bio-physiological energies.

Is There a Connection Between Fertility and Longevity?

While discussing the theories on growing old, it is impossible to overlook the claim of certain biologists, who set up fertility as a criterion of vitality and longevity. Is fertility a proof of vitality? Does excessive fertility shorten life?

Metalnikov has some precise information on this point:

He noted that certain prolific animals such as mice, rats and other rodents, have been observed to have a very short life. Nor did his teacher, Metchnikov, overlook this problem; in his *Optimistic Essays*, he stated that 'the organic energy expended for the benefit of the new generation is much greater in the female than in the male. And despite this the life of the female is sometimes long.'

Metalnikov, after having quoted Metchnikov, wrote:

'Nowadays, we cannot look on a lack of fertility as a cause of longevity.'

It is clear that child-birth plays a very important part in a woman's life in every way. No one has established with certainty that the fatigue to the organism caused by excessive reproduction is fatal. On the other hand, no one can deny that the female organism needs to procreate to achieve its equilibrium.

The process of child-birth is even one of the vital factors in the activity of the feminine organism.

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I do not think it would be correct to state that woman shortens her life by over-fertility. There are women who have had many children and lived for a very long time, and others who grow old very quickly even though they have only had one or two children.

For man, the problem could be put in the following way: is a great aptitude for fertilizing the proof of a more intense vitality? Judging by certain examples, it certainly might appear the sign of exceptional vitality. There is the striking example of a Russian peasant, Feodor Vasiliev, seventy-five years old, who had eighty-three children by two wives (four sets of quadruplets, four of triplets, sixteen of twins, with the first wife, and two sets of triplets and six of twins with the second, as well as five other single children).

For us this problem, like many others connected with growing old and old age, cannot be solved only by knowledge of the purely physical processes, we must include psychological data, not forgetting 'extra-organic' factors and 'extra-cellular' factors, that is, the environment and its innumerable influences.

We find this 'appreciation of the facts' also in Alexis Carrel, who writes:

'One would say that females, at least among mammals, do not reach full development until after one or more pregnancies.'

Fertility is, therefore, an indispensable element in a woman's vital equilibrium, and organic fatigue, in this connection, should be confined to the ordinary accidents which accompany certain confinements, or else to the 'negative elements' which may have been introduced by the man during the process of childbirth.

That is why Externalism and Externotherapy consider that the sexual and reproductive life of a woman is very important, and that her greater or less fertility provides a great many physical and psychological indications.

FROM THE SKIN TO THE SPIRIT

The Spirit and the Psychological Weapons in the Fight Against Old Age

'We should understand that, in the fight against old age, and especially premature old age, as in any other illness, it is just as necessary to study psychological reactions as to use remedies.' (*The Struggle against Death*, by S. Metalnikov)

THE IMPORTANCE of the part played by the mind in growing old is recognized nowadays, even if it has not yet been precisely measured. In Externalism, the mind is of great importance as one of the forces capable of dominating and modifying the condition of our general health.

Although medicine and hygiene have provided many means by which, if they are used judiciously, we can cut down the number of diseases, reduce suffering and postpone death, even so it is undeniable that these methods have not stopped the growth of mental ills, psychological disorders, and all kinds of madness and mania, not to mention collective insanity and mass hysteria.

In the most advanced countries, advanced from the point of view of hygiene, therapy, nourishment and the practice of sports, mental diseases are evidently increasing, as indicated by official statistics, and treatment of these diseases by the usual methods is known to be quite ineffectual. Correl says in his book that the majority of actions against the law and against individuals, originate in psychological disorders. Certainly

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'progress', with all the scientific methods at our disposal for safeguarding bodily health and organic fitness, has still not been able to put a stop to deterioration in man's psychological health. Everyone knows that our existence is ruled by two factors—the physical life of the body, and the life of the mind.

If these two factors are associated within the limits of our material body, the causes of mental sicknesses still remain obscure from the point of view of strict scientific explanation.

Alexis Carrel has proposed creating scientific 'super-institutes', where non-scientists could analyse the work of specialized scientists, in order to discover the connections, the reciprocal influences, which exist between the health of the body and that of the mind.

Let me try to put this in its simplest form: although we know in what way the cells of our body are fed, we cannot yet say whether or not there exists a food for the mind, the nature of which is still unknown to the mind.

Abstract science, music, art and literature have not prevented a visible moral decadence and a deterioration in the purely psychological health of the human masses in civilized countries. One wonders if the powerful factors of civilization are of noteworthy importance only to superior minds which are capable of assimilating their substance.

We know that the nerve cells do not multiply during their existence, but on the contrary, die one after the other. Nevertheless, the nervous system functions and, even at an advanced age, often becomes more efficient. This mysterious contradiction is, however, a fact.

During life, the nerve cells undergo a 'continual process of partial auto-regeneration and biochemical re-adaptation of their protoplasm' (A. Bogomoletz). A kind of 'famine' (this word is also his) manifests itself with age in the case of the nerve cells as well as the others.

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This famine is not the result only of insufficient nutriment, but in the long run of inability to assimilate this nutriment.

Now we know that the nerve cells are at the source of life and psychological health, and it is therefore logical to say that these cells need elements which have nothing in common with the nutritive elements known to science.

We are forced to admit that these other nutritive elements are not factors of tangible life, nor are they to be analysed by modern scientific methods; they are not material factors.

In setting out this problem of psychological nourishment, I do not claim to resolve it entirely. But on the practical plane, it is absolutely necessary now, and always will be, to make this problem less obscure and less troublesome, by elaborating the rules for achieving in the first place, psychological equilibrium, and in the second place, psychological defence against growing old, the mind's strategy for preserving youth.

We can state, with something very near certainty, that our physical organism loses a great part of its physiological equilibrium through the absence, or merely through an insufficiency, of mental nutriment.

The requirements of our body and the needs of its organs must be respected and satisfied (rest, nourishment, etc.). But in addition we very often feel inexplicable and spontaneous psychological needs, which if not satisfied will cause what must be considered as a real psychological famine. That is why psychological needs must not only be taken into consideration but also studied systematically, in order to attempt to satisfy them in relation to our physical state, the conditions of our work and even the environment in which we live.

As things are today, we run the risk that science, in studying the problem of health, may not take the mental element into proper consideration, and may thus make mistakes in imposing

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on the body certain purely physical rules. (I am not speaking of the many different medicaments which can, eventually, have a harmful effect on the nerve cells.)

Alexis Carrel has explained the frightening progress of mental diseases due to the ways of our too material life, a life too subservient to the orders of industrial civilization; but this explanation does not cover the problems of civilization, of social order, etc., that is, factors against which we can make indictments but which nothing, practically, can change. (I do not include the social earthquakes of revolution.)

One is perfectly justified in supposing that the decadence in psychological and moral power is not only due to our inert civilization, which is a collective matter, but also to our individual behaviour during childhood and youth, and to mistakes made in the application of rules of day-to-day life, and also rules of hygiene, education, etc.

Through psycho-analysis science has made, and continues to make, researches into the *causes* of mental collapse as shown through the psycho-physiological life of the organism, by digging into man's past and present, in order to discover the more or less personal reasons which have provoked and which maintain mental disorder.

This method has never really solved the problem of the fight for mental health. In fact, it has often completed an individual's ruin by strengthening his morbid ideas and giving an exaggerated importance to the transient or insignificant happenings of life, that is, by affecting the individual by the most arbitrary suggestion.

The diagnosis of this method is almost entirely based on the dangerously *fanciful* conclusions or suppositions of its practitioners. In this method, one entirely forgets the condition of the nervous system and the nervous tissues, and often ventures into metaphysics. And yet we all know that the

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nerve cells are living creatures, which are nourished by and depend on the biochemical conditions of their protoplasm and secretions.

Why should science be content with these methods, and not seek to influence the nervous system directly by discovering the channel of natural stimulation of the nerve cells?

Alexander Bogomoletz has openly set forth this theory, saying that, by stimulating the physiological system of the connective tissue, one would at the same time stimulate the nerve cells, and that this is a ready-marked path for the cure of mental diseases.

The instructions for the use of the Bogomoletz serum, issued by the Metchnikov Institute and edited for Russian hospitals, show that this serum can be used in 'certain psychological diseases', different forms of schizophrenia and post-infectious psychoses, both pre-senile and senile.

If that is true from the medical point of view, it is true to say that this method of regeneration of the nerve cells can be used just as well in all cases of less serious mental disorder.

After Bogomoletz, Filatov also provided a method of direct regeneration of all the cells, and nerve cells in particular, by the discovery of biogenic stimulins.

I would like, therefore, to emphasize that psychological sicknesses do not only set extra-corporal problems, but largely depend on the state of the nerve cells, the secretions and the metabolism.

I hope that the methods of Externotherapy, which must take into consideration the body as well as the mind, can be determined as much from the physiological point of view as from that of the psychological behaviour of the individual. Externotherapy will above all seek to safeguard psychological health before it can be finally invaded by mental disarray.

We have still to mention an extremely important factor in

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psychology: *sexuality*, which in its turn must be considered from the point of view both of physiology and of psychology.

On the physiological level, it is necessary to say a few words about the sex glands and the other endocrine glands which live in perfect accord with them. Great importance has always been attached to the part played by the sex glands. After the first world war, people thought to solve all problems of health and longevity (including psychological problems) by treating the sex glands, but not one of the discoveries made in this province has really established the predominance of these glands in the resolution of mental and general health.

In fact, hormonal science has not solved the mental problem. The sex hormones, or others, do not in themselves order the psycho-sexual life of the individual. Neither the quality of the hormones, nor their quantity, determine the psychology of sexual life.

Although the sexual act is a physiological act, sexual behaviour is not subordinated to substances and secretions, but to psychological causes and to the reactions of the whole human being (body and mind) in relations with the opposite sex.

The mind, the intellect, the intuition, the spirit, etc., do not depend on the state of the sex glands, nor even, perhaps more comprehensively, on the endocrine system, except of course in the case of abnormal weakness or diseases of these glands, when the general biochemical distress affects the proper working of the whole organism in all its functions.

Nowadays, however, it is very widely recognized that the life and functions of the sex glands largely depend on the pituitary and on the sympathetic system, which can very easily bring about complete disorder, even exclusively sexual disorder, in the individual.

Professor Lafon, speaking of perverse children at the congress of psychiatrists at Rennes in July 1951, affirmed 'that there are

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no perverse children, but only perverted children'. As a remedy for these perversions, he recommended a change of environment, and protective and educative surroundings.

In his opinion, certain perverted behaviour has its organic origin in the bad functioning of the pituitary.

This is confirmation of the importance not only of 'psychological behaviour' but at the same time, of the role of the principal—but not sexual—gland, which allows diagnosis and treatment.

The using up of sexual energies influences the psyche, but does not paralyse the superior powers of the mind—the 'moral' senses, intelligence, creative energies, genius. On the other hand, the 'recharging of the mental batteries' remains necessary for the equilibrium of body and mind.

Since science has not yet discovered nature's secrets in this problem of the mind, we have the right, at least while waiting, to seek to regulate man's behaviour with a view to curbing all deterioration of general health and stimulating the biochemical condition of the nerve cells.

For us, mental deterioration is still largely determined by non-material causes; we believe that the 'Art of Living', which is an external art of behaviour, should lead also to mental health.

Finally, there is no doubt that the startling progress of mental diseases is also due to substances which, through our prejudices about hygiene and medical methods, penetrate in an arbitrary way into the depths of the body, causing biochemical changes in living tissues and nerve cells.

As in the case of cancer, it will be necessary to examine in great detail all the chemical and natural substances which are continually bombarding the human body.

Quite apart from cancerous substances, I believe in the existence and action of substances which do profound and secret harm to the nerve cells,

Mental Fatigue: Worry, Distress, Envy, Jealousy

There is scarcely a work dealing with old age which does not hold fatigue as the typical visible sign of the first approach of physical decay.

They will tell you, and repeat it *ad nauseam*, that fatigue is the hill down which the physical energies slide to end up in irremediable old age—and all kinds of metaphors like this.

This is a little too easy.

In fact, although fatigue proves a general decrease of the energies, it is no less true that one can experience all sorts of fatigues, which constitute signs of other vital processes that have nothing in common as to origin with cellular degeneration.

What people forget to explain is this extreme variety in the sources of fatigue, one of our most tenacious enemies.

It should be superfluous to recall that there are two great categories of fatigue:

1. Physical fatigue (organic and muscular)
2. Mental fatigue, the more serious and more dangerous of the two.

Indeed, it is much easier to fight against the first than it is to fight against the second.

One gets rid of physical fatigue by a rest, either long or short, according to age and the degree of tiredness. But one cannot so easily have done with mental fatigue.

Do not think that, when I speak of mental fatigue, I only mean a more or less vague moral lassitude. Do not forget that what you think is only a physical fatigue really has its origin in the mind and the psyche in its most extra-material manifestations. Psychological 'decay' of any kind reacts on the organic and functional condition of our organism. And this action is deeper than has ever been suspected.

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In fact, the rule is that fatigue is more often the sign of psychological decay than of physical decay.

A few words on physical fatigue which is above all, as we have said, a muscular fatigue. The problem is a well known one; oxygen does not come in sufficient quantities to stop the formation of lactic acid which is poisonous for the muscles. The waste matter is not sufficiently eliminated, which brings about a supplementary poisoning of the muscles and wears them out—their 'fatigue'.

But I especially want to talk about fatigues of a psychological origin, often very threatening to 'the health of the whole', that is, the only real health.

These fatigues are dangerous. They are also curable. But it is necessary to find their origin and nature in order to be in a position to combat them. It is true that they come and take hold slowly, according to factors which do not depend on the individuals themselves.

People often claim to fight these sorts of fatigue by means of specific medicaments, which are usually chemical compounds intended to re-establish the equilibrium of the vaso-sympathetic system.

All these methods are more or less related to the use of narcotics and do not re-establish much. Like drugs, they only stop certain manifestations, hiding the real causes.

It would be absurd to make a formal indictment of these methods, because medicine and doctors are the prisoners of well-established prejudices and traditions; the practitioner is asked to give effectual and radical help in doing away with organic manifestations, which often stop the patient from carrying on the normal rhythm of his life. People want a remedy which 'repairs' and creates a better condition. But it is only a question of an apparent better condition, of a temporary installation.

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In fact, by these methods, the cause of the evil is neither fought nor eliminated, because this cause is psychological and often permanent; it is connected with every-day life, with work, behaviour, surroundings, and with the normal external environment.

Neither is it possible to overlook other methods used to fight inexplicable fatigues: the methods of suggestion. These only subordinate the consciousness to a superior will, and purely and simply camouflage the evil. Certain results are obtained but these, I maintain, are very harmful to the health of the mind, and in direct consequence to the health of the body.

In effect, these methods provoke conditioned reflexes of an infinite variety in the depths of the body, that is, in the organic metabolism and the whole cellular conduct.

The question arises, therefore, how best to intervene in order to combat these 'moral' fatigues.

The main difficulty arises from the fact that, very often, they are part of the individual's life itself, and are formed by the living conditions of his environment.

These psychological fatigues have external manifestations: worries, stresses, envy, fear, inexplicable hate, exaggerated suspicion, unfounded jealousy, etc. Man suffers deeply in being prey to these feelings, which finally wear out his spirit and body.

'I'm fed up to the teeth with everything!' he cries, in his despair and misery.

Everything tires him, everything upsets him, everything bores him, everything shocks him.

We know the dramatic consequences of this exhaustion: quarrels, divorces, family litigation, separations and, finally, misanthropy and solitude.

With regard to these cases of psychological fatigue, we must read what Alexis Carrel has written on our 'inert civilization'.

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Yes, our industrial civilization, our necessities, the constant wish to earn more, all this has created unattainable and often repressed desires.

The reader who has the patience to read the whole of this book should note particularly the chapter which deals with the mind and the 'spiritual food', where I have sought to explain that we need a very special nourishment for our mind.

But let us not forget that our life has social foundations, which in the great majority of cases lack action, creation, the need to succeed, the joy of achieving an ideal or of just reaching a goal.

With civilization, we have sought to achieve a safe life, characterized by a stable and sustained well-being. At the same time we have lost part of the means of changing our life. Standardization, industrialization have regimented workers and intellectuals, and have bound and chained them to stable occupations from which it is impossible for them to escape.

The great majority of humanity finds itself unable to gratify spontaneous desires, and the instinctive need to fight. There it is, glutted with badly-ordered hopes, mortified with repressed desires.

Improved and guaranteed salaries, standardized food, regular work bring material satisfaction, but paralyse us and arouse desires of every sort. The impossibility of satisfying them affects the individuality, and leads to psychological sicknesses.

Millions of years of fighting are today reduced to the calm life acquired by certain developed countries.

In fact, the mechanization of work constitutes a crime against the individual. By relaying 'music while you work' in factories to encourage production we are paralysing the psychological life of the worker, which results in sickly reflexes which use up physical and psychological energies. What are created are

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quasi-epileptic reflexes, which permit of a higher production. The worker gets a higher salary, but he becomes exhausted much more quickly.

How can we be surprised then at the crimes and illegal acts of which we are witnesses. One forgets that man is not a machine, and that his body is only the half of his being. One forgets the psychological life, one forgets the reality of the mind.

Physiological fatigue, therefore, has its source in the great majority of cases in mental fatigue.

We must not forget that man is made in such a way that he needs to believe at least that he is fighting for something, whether it is in science, the arts, politics, sport or collecting postage stamps.

Those among us who have lost all interest in the struggles of life are damned. They easily fall ill and die. They become lifeless or, worse still, perverted and even criminal.

According to the great majority of biologists, envies, worries, distress and violent or depressing emotions shorten life. But it is my belief that these phenomena are not themselves causes, but effects and consequences.

An Endemic Disease of Man Mental Exhaustion

There must certainly be a reason, profound and categorical, why man—alone of all the animals who people the earth—does not succeed in living five or six times the length of his growth, that is, in all, a hundred to a hundred and fifty years.

When Metchnikov established this arithmetical law of animal longevity (for example, a cat whose growth is completed in eighteen months, usually lives ten or twelve years), at the same time he forced us to ask ourselves the following question:

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‘What are the mysterious forces which stop the reel of human life from unwinding normally until its end?’ In other words: what are the causes which lessen our vital faculties to the point of reducing our length of life by a half, to the point of depriving us of fifty per cent of our biological expectation?

To this serious question (very stimulating both for the man in the street and for the scientist) there are two possible answers.

The first, as we have seen, is of a physical order, a purely material and purely biological order. It presupposes a whole series of suspicious questions aimed at our ways of life, our inadequate foods, our too exaggerated pleasures. It even calls for, inevitably, a sort of formal indictment of what we proudly call our civilization: of the machines which screw up our nervous system, of the tyranny of speed, of the inhuman organization of human affairs, of physiological overwork, of the hustle of great cities, and also of our suspect dyes, our soaps, our lotions, our clothing, even our medicines, which we continue rashly to draw from the chemical underworld. I throw all these together, because the moment has not yet come to draw up completely the respective responsibilities of all these heteroclitic influences in the work of destruction of our physical being.

The second answer to be made to the question which opens this section should, in my opinion, be formulated somewhat as follows:—

Man lives—proportionately—half as long as his lesser brethren, because he has received from Nature the supreme gift: thought; because he is endowed with a mental life incomparably more vast and more deep, because thought, although it exalts when it knows how to discipline itself, slowly, secretly and implacably wears out the body when it is left to

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its own devices or to blows coming from outside, blows from men or blows from fate.

It is a well-known fact that the more a creature is endowed with thought, the more capable it is of suffering.

The effects of thought on the 'heart', the influences of mental activity on the nervous system; that is the essence of our subject.

Whether it concerns great men or the average individual the rule remains the same. There exists a human exhaustion of a mental origin. More exactly, there exists a biological exhaustion of man, which is caused by his mental life, his thought.

This is a kind of specific and endemic disease of humanity. We die too young because (among other reasons) thought uses up our tissues, exhausts our organs and breaks down our cells.

The Externalist Definition of Character

I do not want to use mental and verbal acrobatics to create artificially a new semi-philosophical thesis, but I want just to define the meaning of the word 'character', which is an idea which we have ourselves created to include all the particular manifestations of the behaviour of a given individual.

People often aspire to defining too many things under this vague denomination 'character'.

For us, character is the collection of man's psychological reactions to events, to social environment and also to 'natural external environment'.

The individual psychology is the origin of character. The latter is formed, to a certain extent, from hereditary elements, the physico-chemical state of the body, and from physical and

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psychological influences coming from external and social environment.

The hereditary and physico-chemical state of the body is the web on which life and nature embroider such and such a design.

It can be admitted that this design becomes clear at a certain age, but one cannot go so far as to claim that there can be any question of a final design. The age of the relative stabilization of character can, therefore, be either early or very late, according to individual cases. A man enters on life more or less equipped with his character, but experience shows that character is modified by various influences, natural, physical, physiological and psychological, which react on it strongly.

However, if we wanted to 'characterize' a man by the particular signs of his *character*, we would only draw a very incomplete and arbitrary picture of him, because each of us knows that in the depths of his own self-observation he keeps personal secrets which govern his outward reactions.

Character is not a factor to be compared in importance with other mental 'signs' of an individual (talent or intellect) and it is still dependent on physiological causes and external environment.

The idea of character is indeed very relative; an individual's character is to a large extent finally created by the feelings and reactions of his friends and family who shape his personal ideas on what may and may not be done.

It is very seldom and almost impossible that two people, taken separately, would define and judge the character of a third in the same way. We are inclined to find an explanation, at whatever price, for the individual manifestations of a person whom we claim to know, and from the most complex individuality we take a simplified impression and stick a label to it.

Even history gives us striking examples of this psychological

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phenomenon when we see two or three contemporaries of a famous person giving us two or three completely different definitions of his character.

This mania of humanity to systematize and classify (even in the province of psychology and of the most intangible abstractions) often culminates in arbitrary conclusions, which we then seek to present as scientific. Certain researchers sacrifice long years of their lives to proving scientifically preconceived ideas.

We have been particularly struck in this regard by the attempts of an American doctor, Sheldon, who for a long time thought he could classify human characters in three series, and sought their origins in the period of fertilization of the ovum by the spermatozoon before the formation of the embryo.

According to this scientist, character is formed in complete correlation with the formation of the three first layers of the fertilized ovum. Here is one man who has solved the problem of the relation between body and mind because, if Dr. Sheldon is to be believed, character is determined by the predominance of one or other of these layers!

According to Sheldon, physical signs can be found in an adult, by which he can be classed in one of the three serial categories of characters.

If Sheldon was only attempting to establish, through certain signs, the morbid or physical state of an individual, then this method is already known. Recent sciences—morphology and morpho-physiology—(Sigaud and Auliff in France, Lorentz and Krestchmer in Germany, Pende in Italy and Tchernoroutzki and Bounak in Russia) have seriously established the correlation between the external form of the individual, his endocrine condition and his psychology.

But Sheldon, using these methods of diagnosis, has wished to establish that character and individual psychological pre-

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disposition are revealed by more corporal signs. He simplifies these methods even further, he would be content with photos of naked bodies.

He proposes to publish a sort of album, *The Atlas of Man and Woman*, in which thousands of photographs would be classed in series. You must, it seems, buy this book in order to know your own character and your own diseases. That is what comes of the mania for systematization.

Even doctors would receive, thanks to Sheldon (or at least so he says) a valuable helping hand. They would be able to 'confirm' their diagnosis by consulting the *Atlas*.

And psychiatrists too, for 'corporal psychiatry' has been born and finds its most perfect expression in collections of photographs.

Finally, in all social and commercial relations, in the offices of the Civil Service, in business houses and even in the homes of candidates for marriage it will be possible to dig into this magnificent *Atlas*, where among thousands of photographs of nudes, the character of the competitor, of the applicant, of the claimant, of the suitor, etc., can be identified in advance.

But turning over the pages of this *Atlas*, you will also be able to discover how much your lunch will cost with such and such a person, because Sheldon, by the 'physical marks of the body', will tell you if your guest is a 'great eater'.

The only, but not unimportant, inconvenience in this business is that you cannot always invite the subject to undress in order to compare his body with Sheldon's photographs.

But let us be serious, and return to our real subject: Sheldon claims, then, that the character and the whole life of the individual is formed by the predominance of the development of one of the three branches of the fertilized ovum. He has even made out a *Scholar's Handbook*, with notes and co-efficients

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for the types in series. It is true that each of the three 'leaves' of the ovum (the word is J. C. Rostand's) forms such and such a group of organs and tissues of the embryo:

1. The ectoderm, the skin and the nervous system. (Nature by one of its miracles, connects through science the badly-neglected skin with the nervous system, the most important factor. Evidently science is mistaken in the role which it accords to the skin.)
2. The endoderm, which will form the tissues of the digestive system, the lungs and dependent glands.
3. The mesoderm, which will form the skeleton, the muscles, the heart, the kidneys, the sex glands, and the circulatory system.

This is true, but to construct a 'corporeal psychiatry', a diagnosis of character and of organic diseases by mere bodily signs, on the pure hypothesis of the predominance of one of the three layers, needs a certain amount of courage.

Because even if there exists an apparent dependence between the construction of body and character, that does not solve the problem of character, nor above all that of the modifications of character during life, and in any case, that does not provide any weapon for a scientific fight against diseases and degeneration (physical and psychological).

Starting from the principle that the fight against old age and other diseases should take into consideration both body and mind, and that it is possible to reinforce the natural fighting power of each, we think that it is both necessary and kind to cast strong doubt on the 'universalist' theories which class living beings into series.

In my opinion, the character is one of the branches of the great tree made up of the psychology and the mind of the human being. This branch is 'individual', and it gives occasion

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for a separate study of each of the individuals who populate the earth. We are far away from 'atlases'!

Finally, everyone knows that the character (that is, the psychological reactions) is changed by disease and by a disordered state of the metabolism. Every human individual has the right to a special diagnosis of his body and mind, and to a treatment all his own, which suits himself.

Carrel, whom I often quote (but he deserves it), even claims 'that it is possible to give certain characters artificially to human beings, as to animals, by submitting them from an early age to an appropriate diet'.

So character, like other conditions of the body and of the mind, can be influenced, and even regulated and attuned, by means of very varied factors drawn from nature and external environment.

Externotherapy, which has to solve the problem of the mind in general and the character in particular, aims at correlating the analysis of the character of every man and every woman taken individually with all the results of research into his or her behaviour, every-day way of life, work, past history, and habitual reactions.

Our 'Externo-type record' will note and analyse these factors, and put this study at the disposition of the doctor, who will in his turn examine the state of the internal organs.

It is, moreover, only by this systematic collaboration between the doctor and his subject that it will be possible to establish the Externo-diagnosis, and indicate the adequate treatment. (The externo-type record needs, as we shall see, a great degree of physical and mental self-observation.)

We consider that the character is one of the indications to be brought to bear on the externo-diagnosis. But the character should not lead us to make hasty physico-psychological diagnoses, any more than heredity.

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Does the Intelligence Depend on the Body?

Medical men and scientists always avoid making clear pronouncements on the problem of the exact relationship between the intellectual faculties and the physical condition of the body.

But it is obvious that diseases and various aspects of degeneration have a wide influence on intellectual capacity, although undoubtedly some great old men, even if sick, often preserve an extreme lucidity, when physically their bodies are almost completely ruined. On the other hand, their capacity for work decreases, because they tire more quickly.

The intelligence is, without doubt, one of the manifestations of the mind or the psyche which has a strong control over the life of the body, but we still know nothing as to its degree of dependence on the body.

Striking examples show us however that old men are capable, by an intellectual effort, of influencing their physical vitality. There are scholars, writers and musicians of normal, or even mediocre health, who have lived longer than many sturdy ordinary people. We cannot overlook the fact that psychological power, faith in the wide sense of the word, sustains the physical and physiological powers of the organism.

I do not propose dealing here with abstract problems, nor to analyse the problem of the intelligence from the philosophical point of view.

However, applied science has been able to establish that intellectual work does not give rise to changes in the metabolism. ('Metabolism' is the whole of the known changes which take place in the organism.)

The intensity of organic life can to-day, we know, be relatively controlled. It is now stated definitely that any physical action of the body provokes modifications in the metabolism.

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Basic metabolism is measured chiefly by the amount of oxygen absorbed, and by the carbonic acid given off, while the body is in repose. This metabolism is clearly more intense when the body is engaged on physical work.

Now, experiments have proved that metabolism does not change during intellectual work. 'Intellectual work does not produce any rise in the rate of metabolism', states Alexis Carrel.

So we can assume, or believe, that the intellect does not consume energies of physico-chemical origin, but that it finds means of nourishing its own energy outside normal metabolism. One is certainly led to suppose that the intellect obtains its nourishment from extra-material forces and nutriment.

These findings are one more proof that the intellect belongs purely in the physical sphere. If the psyche is to be found in the body, the latter only influences and feeds it in a very small and secondary way. In any case, the chemical changes of the body are not the primary factors in the nourishment of the intellect.

We are, therefore, once again forced to conclude that thought and intellectual work are not purely physico-chemical manifestations, but depend on some unknown nourishment of their energies, taken from the very heart of nature.

Certain individuals are prepared to absorb this 'psychological nourishment' almost in its entirety, and to direct it in order to reinforce their intellectual and creative capacity. Others, although in good bodily health, are often very severely starved of this capacity.

It would not, moreover, be correct to imagine that the battery of the intelligence is charged right from birth. It is more true to say that this intellectual energy is recharged and discharged during the whole of man's life up to extreme old age.

But even if science knows nothing of these foods of the intellect it would not be possible to feed the intellect merely by

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educational processes. There is no remedy in books and lectures for a lack of intelligence or of creative powers.

One must, therefore, take into consideration the intellectual reactions of every individual and analyse the possibility of eliminating harmful factors for such given individual intellect. Factors which are harmful for one individual may prove to be beneficial for another. It would seem therefore, that methods of investigation must be created in order to establish a diagnosis of the mental activity of every person.

I would go so far as to claim that the most 'material' part of the mind does not lend itself to positive investigations by medicine or science, but that it keeps the secret of its vitality, its capacity and its power.

The justice of the proverb, *Mens sana in corpore sano*, does not appear to be entirely proved: physical energy does not determine or characterize the health of the whole of the body and of the mind, that is, the psycho-physiological equilibrium which is the only real health.

Even the great Alexis Carrel, who attempted to make an objective study of all scientific statements upon this subject, has found nothing more than this to say:

'One would say that the working of the intelligence is facilitated by rhythmical contractions of the muscles. Certain physical exercises seem to stimulate thought.'

But Carrel does not indicate the foregoing any more precisely, nor does he supply any proof.

I myself believe that physical factors are in the end 'valuable' for some intellects and harmful for others. We believe that the problem of the mind and even of psychological nourishment is different for each individual. In any case, let me repeat that physical factors are, in particular cases, only a very secondary aid to the sustenance of the psyche and the human intellect.

Some people rest psychologically when other people tire.

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Some can reflect easily in spite of noise, but most people prefer quiet. Some people concentrate in semi-darkness, others prefer light and go to sleep when it is dark. Finally, some people walk in order to think, others sit or even lie down.

The objection might be made that I am neglecting the role of the physico-chemical energies of the organism in the health of the mind. My reply will be that I admit, since the evidence often shows it to be so, that in a very sick or weakened body a completely healthy intellect occurs more rarely. But this is not a rule which applies to everyone. How many people, when they have become seriously ill or infirm, have proved they possess extraordinary creative power!

By my methods, I endeavour to preserve man from both physical and psychological disorder and to create conditions favourable to the preservation of equilibrium in the name of the fight against growing old.

But it would be wrong to claim that the intelligence depends principally on the condition of the body (tissues, glands and metabolism). On the contrary, in my opinion, the ageing of the intellect is often the cause of the ageing of the body. And this compels me to seek a solution to the problem far from the beaten track.

Creative Power, Talent and Genius as Seen by Externalism

‘ . . . When men are born, they are already very largely pre-determined, and outside circumstances can only have fairly limited effects on them.’—Jean Rosland, *Man*.

Although I do not dispute the importance of the problem of heredity, I do not believe that hereditary causes are of such primary importance.

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The influence of external environment seems to me to play a role of different importance, and this assertion is very largely valid when we approach the problem of man's intellectual capacities.

Whilst I admit hereditary influence (biologically), I consider that conditions of life and external influences constitute a set of factors which assist in forming the individuality even of the embryo in the foetus. Influences from the external environment, and psychological shocks to which the mother is subject during her pregnancy, depend only on chance.

It cannot be denied that, in order to explain the different levels of intelligence among children born of the same parents, it is necessary to take into account the fact that the psychological states and the influences which affect the mother in the various phases of her life during successive pregnancies, are more or less varied. And these determining factors are greatly strengthened after the birth of the child, when the external environment takes hold of him to fashion him more directly and more profoundly.

Individuality, therefore, is not transmitted in its entirety, but evolves under the most varied influences and causes right from the moment of conception, and these influences and causes, I repeat, are in no way connected with the biological condition of the parents. That is as true for the physiological condition of every living creature, as it is for the psychological and mental condition of a human individual.

To say that heredity gives an almost final stamp to an individual's intellect is a statement which science is far from having proved. Science, moreover, does not yet claim to have laid bare all the secrets of the mind and the psyche. Nature has not yet delivered up these secrets to us.

Moreover, Jean Rostand himself judiciously observes:

' . . . Real intelligence is scarcely known to us except in our

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own species, on which we are forbidden to make experiments.'

I repeat what I have said about other problems: it is better to give up trying to 'explain' something which for the moment is inexplicable than to go in for all sorts of suppositions and hypotheses, brilliant though they may be.

Biologists, physiologists and psychologists are, relatively speaking, in agreement with each other up to the point that 'man thinks, loves, suffers, wonders and prays, at the same time with his brain and with all his organs'. This is true of Descartes, Alain and Carrel. On the whole, from the physiological point of view, all the vital forces of the body, organic and cellular, play a certain role, which is more or less difficult to analyse, in conscious action, or, to put it better, in considered action.

The formula is very general, but it does not in fact give any precise answer, and above all it does not explain anything. In its own interests, science should continue its investigations into the cells and substances of the body, in order to discover there the sources of the intelligence.

In my methods of fighting against degeneration, I choose the undeniable factors which make up the environment in which the individual is born and lives. Nature governs the process of individual formation and of the development of the intellectual aptitudes. But the external environment, physical and psychological, can be watched, and up to a point organized and directed. This particularly applies to a woman before she conceives. She can subject herself to a series of preventive and practical measures in order to preserve her physical and psychological equilibrium which will affect the child in its embryonic state. It is impossible to know whether the child will inherit certain qualities or certain defects from the parents. But a beneficial influence on the organisms of the parents remains, or rather becomes, a practicable means of improving each individual person.

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In my opinion it is still undeniable that genius, talent and creative power are not conditioned by heredity, because men of genius are very ordinary at birth, and their children are almost always with very few exceptions, lacking in any sign of genius.

Some people think that geniuses are abnormal creatures, 'unbalanced' like criminals and lunatics.

Others think that God has endowed them with 'divine powers'.

Still others think that genius springs from the biological, hereditary process, the generations having amassed a certain energy to concentrate it in a single individual. Even others think that genius 'travels', and, remaining immortal, is re-incarnated into such and such a body, leaves it on its death and goes to settle in a fresh being, etc., etc.

In any case, nobody, up to the present, has brought to light the reasons for the birth of genius, or even of mere talent.

Men are not equal, as Jean Rostand says, in their mental and intellectual powers. We are used to placing the source of the intelligence in the brain, but that is still the 'mystery of the gods'. One thing is certain: the weight of the brain is of no importance, and this problem still remains unsolved. Jean Rostand offers this hypothesis:

.. 'Perhaps it is a question of the differences of cellular structure, or even of the differences of protoplasmic quality, imperceptible to the finest histological methods . . . The intelligence is not a matter of the brain, but of the whole being.'

Alexis Carrel and other great biologists agree on this point, that the causes of intelligence are totally hidden. On the other hand, it is still within the bounds of possibility that the development of intelligence can be stopped, crushed or, on the contrary, freed by the action of the physical and psychological factors of external environment.

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It is incorrect to claim that genius and talent always appear precociously in young people. Many cases are known where genius is shown in infant prodigies ('wunderkinder', miracle children as the Germans say), but disappears completely at an adult age. There are also cases when genius does not appear until maturity, i.e., thirty-five to forty, such as Anatole France, or much later still as in the case of Bernadin de St. Pierre.

It is also a well-known fact that great literary geniuses have been proved to be poor writers of literary composition at school, or even dunces, and that children reported to be weak at arithmetic have become mathematicians or engineers later.

After attributing a predominant role to heredity, Rostand writes that external influences can weigh on the development of the intelligence.

'Without even speaking of diseases or shocks, which can cause an early arrest in development of the intelligence, this development can be fostered or hampered by the climate at home, at school or in society', he writes.

Science has been able to bring together all the elements which allow the problem to be brought on to a practical level.

Is it possible to protect the intelligence against man's degeneration at different ages, and against the evils of environment?

My answer is, yes!

Although Alexander Bogomoletz has not spoken either of genius or of talent, at least on matters concerning the fight against degenerative diseases and growing old, he was quite categorical.

Speaking of the connective tissue, he declares that 'its state conditions to a considerable extent the state of the other cells of the organism, not excepting the nerve cells, which are the centre of psychological life.'

And he reveals further on that he has tried his serum in cases of mental illness and obtained positive results,

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Now, genius and talent are creative manifestations of the mind, that is, they put into action and bring to light the whole of our mental vitality.

If a lunatic can be cured by Bogomoletz's serum, it follows that the administration of the serum can equally well stop the weakening and ageing of the intellect, by stimulating the nerve cells by means of the connective tissue the 'fighting tissue', the root of the organism.

Science must sooner or later concentrate seriously on such treatments and experiments, and prove or disprove their efficacy. What is at stake is too important, for it includes not only the health of the body, but also the balance of the mind, the protection of the intelligence and of creative gifts.

In my opinion, there is reason to think that the stimulation of the physiological system of the connective tissue is equally possible through other stimulants.

Mental weaknesses are on the increase in our so-called civilized world. The fight against madness, crime and perversions, and the struggle to protect talent and genius, seem no less important than the war against disease.

Perhaps people will come to admit that in this province too the fight against old age and degeneration constitutes the best prophylactic for psychological weakness and intellectual decadence.

In fact, if the biological and physiological origin of genius, talent and creative power is still unknown to science, this does not lessen the right and duty of scientists to fight for their protection.

Even in the semi-darkness of science, it is possible to fight victorious battles.

If we could ensure an effective scientific aid to every human organism in its capacity as a collection of psychological energies, by protecting them against the destructive evils of environment,

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and by stimulating the biochemical vitality of cells and secretions, how much genius and talent could be saved from the mass destruction that is directed against them by the robot organization of the modern world.

Talent and intelligence are not created, but they may be protected by means of science.

Let me say in conclusion that it is of no importance if geniuses are originally lunatics or 'unbalanced' people, because the future of humanity depends, when all is said, on its seekers after talent or genius—on its creators.

THE REAL WAY TO REJUVENATION

The Bodily Importance of the Mind

EXTERNALISM WORKS among other objectives towards the coming of a truth which medical science has, up to the present, scarcely formulated: *the bodily importance of the mind*.

We owe a great debt to Metalnikov for having been one of those far-seeing people who bring down psychology from the heights upon which it has been isolated in order to integrate it into the chain of cause and effect which decides our physiological fate, the vitality or decay of our cells and, in effect, our health, happiness and longevity.

The ideas, sentiments and images which form the web of psychological life do not belong solely to the domain of psychology apart from biology. No, those ideas should no longer be given up to the speculations of metaphysicians alone, on the pretext that they are of an immaterial character. Ideas, as the biologist of today and the doctor of tomorrow should view them, do not form (as in Plato's universe) a transcendental world separated from the world of bodies.

When Metalnikov speaks of the 'pharmacodynamic power of the will', and also of the anti-infectious power of certain mental images, he indicates something which we should follow to its ultimate consequences: it is a question of introducing images, ideas, associations of ideas, emotions and dreams into the laboratory, the hospital and the clinic, so that they may share, with ointments, serums, glandular extracts, cardiograms and scalpels in human regeneration.

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Man's pleasures and pains, his impulses, his imaginings, his illusions, games and creative capacity, assume the highest therapeutic importance. To accord them this importance is not behaving like a fakir, a hypnotist or a faith healer, but achieving the most positive act which the science of man has awaited for fifty years.

So the neuro-psychological problem is only just being formulated in terms which will lead to its true solution.

It is a fact of experience—and even of experiment—that a man who is psychologically and mentally reduced by the difficulties of the battle for life, does not resist diseases, including bacterial diseases, with the same success as one whose psychological equilibrium has remain intact.

This does not at all mean that a fine speech or the reading of a consoling passage in the Bible can be sufficient to drive away the microbes which threaten our organism. Let us be careful not to confuse good words and disinfection. The only effect of such confusion would be to make even more fruitful the career of wiseacres and charlatans of every complexion. But this does mean that the different happenings in a man's life, not content with modifying his psychology, also exert through the latter a powerful influence on the biochemical condition of the cells and functional organs.

This also means that we must take these still mysterious connections into account and learn their mechanism so as to bring it into the service of both man's and woman's longevity. I would also add: of woman's beauty and natural seductiveness.

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I have said a 'neuro-psychological problem', and in fact to speak of a psychological problem only would be to leave it and its solution hanging in the air.

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I have already said that our mind is linked to our nervous system. The real meeting point of the body and the soul (sought for so long by the philosophers) is our nerve cells. In the light of biology, we have the right to say, roughly, that it is through the nerve centres of the sympathetic system that the sight of a Shakespeare tragedy (a psychological phenomenon) affects the diastases of the liver or the biochemistry of the epidermis (a physiological phenomena); or again, that the news of the death of a friend upsets the equilibrium of the pituitary or the digestive processes.

We must not lose sight of the fact that we are dealing with the question of rejuvenation. We must therefore turn once again to Alexander Bogomoletz, for whom all 'perturbation of the functions of the nervous system' dominates the organism in its entirety. He says that 'the study of the sympathetic nervous system confirms more and more that its functions consist in maintaining the physiological tension (the tone) of the active cell'.

But he adds that there exists a 'connection between the para-sympathetic nervous system and its sympathetic part' on the one hand, and the 'manifestations of psychological life' on the other hand.

He notes yet a third important point: it is the undoubted character of the 'influence exerted by the superior nervous activity and the psychological states on the general state of the organism and its internal organs'.

And finally he recalls – the fourth important point—that the nerve cells are fed by the same biophysiological channels as the other cells of the organism, the chief of these channels being the physiological system of the connective tissue.

What conclusion should we draw from this four-fold declaration?

That now and henceforth we hold, at least in principle, the

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means of strengthening, stimulating, and balancing, in a word the means of 'rejuvenating', our nerve cells.

That we hold, consequently, the means of reconstructing the psyche and of rejuvenating the spirit.

We Must Discover the 'Rules' of Long Life

The means of rejuvenating should not, however, be understood in a narrowly biological and medical sense.

It is a fact that man's body is not at the same time the cause and the receptacle of the sensations and emotions which he feels, of the judgments and the acts which follow. There is no doubt, for example that if I see the sun, it is not my body but a certain luminous object in the sky which is the cause of the image which forms in my retina, of the corresponding idea in my brain, of the heat which I feel, of the sensation of well-being or discomfort which accompanies it, and finally of the giddy cycle of biochemical reactions which the rays of the sun release through my organism.

And it is the same with almost all—and one could, in the last analysis, say all—the impressions and sensations which I experience, whether I am awake, or in the deepest possible sleep.

Indeed, what we call, not without a certain pride, our 'internal life' (day-dreams, meditations, memories, flights and reluctances) is extraordinarily external.

In other words, there is no mental life without the environment in which the body and its nerve cells are plunged; there is no spirit without the constant concourse of the outside world, of which it is a sort of continued creation.

It follows that any attempt to rejuvenate the spirit, without taking into account the external factors brought into the picture by the universe (light, altitudes, climates, humidity

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waters, winds, etc.) is equivalent to trying to solve half a problem which must be solved entirely or not at all.

In fact, purely scientific and medical action, direct action by the biologist and the doctor with a view to stimulating the functions of the nerve cells, runs the risk of being side-tracked from its ultimate goal if intelligible laws and useful rules are not deduced from the apparent confusion of influences exerted on the human body by external environment.

Have these laws and rules been formulated? Not yet.

They have only been formulated by scraps of knowledge picked out of a chaos of ignorance, which has been prolonged, and even increased, since there have been men, and men who grow old before their time.

Just like you and me . . .

We can see the task which devolves on the biologist, on the doctor, on the scientist as well as on the artist.

In my opinion, as I have already said, the mind is not only fed by drawing on the nerve cells through the normal channel or physico-chemical nutrition. It is also fed by drawing on extra-corporeal and extra-material sources.

The problem of this double nutrition, material and non-material, is all one with the conquest of general health of the body and mind.

We no longer have the right to defer this problem, which seen from the angle of the relations between psychological phenomena and the phenomenon of growing old, can be put this way:

The prolonged youth and long life of our body chiefly depend on the condition of our mind (or psyche) which, in its turn, depends not only on the functioning of the neuro-cellular mechanisms but also on the intervention of non-material factors.

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The Real Place of Sexual Life in the Question of Rejuvenation

And now, what relation is there between the more or less regular functioning of the sex glands and the ageing of the organism?

Here we touch on a question on which prejudices abound and superstition abound. But prejudices are made to be swept away.

Alexander Bogomoletz will help us in this.

'It would be a great mistake', he says, 'to consider the ageing of the organism as an exclusive consequence of the wearing out of the functions of these glands (he is speaking of the various endocrine glands) and in particular of the internal secretion of the sex glands.'

He adds:

'The extinction of the sexual functions is more often a symptom of the beginning of the ageing of the organism than its cause.'

Indeed, if it is correct to say that the weakening of the genital capacities is a sign of growing old, it is no less correct to affirm that eunuchs are capable of living for a very long time, if they are not carried off by accidents or disease which are in no way sexual.

In fact, the endocrine glands, their flow of hormones, the quality of these hormones, and the more or less harmonious functioning of the whole endocrine system, do not cease to play their part in the phenomenon of organic ageing. Although the sex glands eventually weaken, they are not the only ones subject to this fate. The whole endocrine system is subject to it. And even so, the endocrine system, even taken in its entirety, cannot be held to be the only cause of growing old. On this point, it is the connective tissue, as we have seen, which finally counts.

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Here, with one blow, we have reduced the sex glands—in the question of rejuvenation—to a much more modest role than has been attributed to them hitherto.

For example, we know now (made certain, alas, by science), that Professor Steinach and Dr. Voronoff never really rejuvenated anyone and that their arbitrary interventions had no other results on the treated and grafted subjects than a temporary amelioration followed by a more serious relapse in the by no means cured disease of growing old.

Groping, chance and arbitrary action in the 'government' of the human organism must be eliminated as biology acquires the means by the increase of its own knowledge.

And biology, recently enriched by psychology, teaches us that sexual life (at least with humans) does not depend only on the organic state of the glands, but also, and in an immense measure, on the psychological life. Since psychological reactions have their causes in the external world, since they are determined by environment (physical and moral), since consequently it is our cellular system in general and our nervous system in particular which are affected, we must cease to consider the sexual problem as a strictly glandular problem.

Someone has said (I believe it was Marcel Proust) that love is a 'nervous disease'. From the point of view of biology, it could not have been put better.

And so love is a 'psychological disease', or let us say (in order to avoid the objections which could arise from the word 'disease') that love is essentially a neuro-psychological phenomenon. In fact, psychological life has its source in the nerve cells, and the psychology of love is no exception to this law of spirit and body.

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*Youth of Body and Youth of Mind, or
'How to Solve the Problem of Young Old Men'*

One of the major preoccupations of human existence is the preservation of the youth of body and mind.

Medicine and science protect youth within the limits, it is true, of the battle against disease. But medicine and science have never been concerned in any practical way with youth of mind.

So it is of prime importance to seek for any interdependence which may exist between the health of the body and that of the mind.

It is necessary first to point out that youth of body does not guarantee youth of mind, or vice versa.

Many people, certainly, have an apparently youthful body, but an old and constantly deteriorating mind. The collapse of this apparent bodily youth will be very swift, because the mind is already degenerating. But the contrary is also often the case—bodily energy declines whilst the mind stays young and lively.

Indeed this situation is less serious, because the force of the mind rules the body to a much greater extent than the body governs the mind. The man who preserves his psychological powers can get sufficient psychological reinforcement to give him hope of repulsing diseases, sicknesses and deterioration. This, no one can seriously deny.

For my part, I am sure that the famous surgeon who 'never found the soul beneath his scalpel', never failed to hope, in serious cases, that his patient 'would keep up his morale'.

Perhaps it is unnecessary to repeat that the advertisers who propose to restore youth and ensure a long life by means of the stomach through the use of molasses and yoghourts, are neither prophets, nor wise men.

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Bodily youth cannot be maintained without mental youth, just as bodily health needs that of the mind.

It is true that the man or woman who feels young, and whose external appearance (especially his skin) is in a youthful condition, can more easily keep his self-confidence and his psychological youth. It is for this reason that we see virile men and pretty women grow old in a moment under the effect of a 'hard blow' or great mental suffering.

I could give many examples of this premature ageing, but that is not my job, and in any case this phenomenon is sufficiently well known to everyone.

I would repeat once more that, according to my methods of Externalism and Externotherapy, this problem of youth, of the body and of the mind, remains a problem of the whole human entity, being above all that of the fight for the preservation of the vital energies in their *original youthful* condition. To curb the rate of ageing is the only possible means to attain this end.

I would emphasize again that science has medical means for preserving psychological energies, but that mental youth is a factor with which science has never been concerned. The destruction of the youth of the mind, however, is characteristic of our century and age.

Modern youth is getting old quicker and quicker, from the point of view of the mind. It wears out more swiftly, it loses its ability to fight and, as can be seen in every-day life, it is subject to psychological influences which are extremely harmful to it. We are creating nowadays young men who are dotards.

The difficulties of life speed up the exhaustion of the young by oppressing them with distress, boredom or disappointments.

We cannot fight against the factors of life today, and are forced to take them as they are. But, on the other hand, we can in individual cases fight against mental ruin and psycho-

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logical deterioration. The individual, if directed, helped and advised, could always find again the psychological nourishment necessary to enable him to recover.

Yes, we believe that the young, and even the very young, can be advised and directed by methods and rules which are generally able to fight this battle.

You, who are parents, teachers and guardians, you who are young husbands and wives, and lastly you who are our rulers, cannot without danger forget that youth of body and education are not the only objectives to be reached. Health and youth of mind are not to be obtained through text books, through the theatre, the cinema, music or discussions only, but through serious and concentrated study of a young person, the varied influences which bear upon him, and so to the discovery of his most useful occupations.

I can only repeat that the individuality of young people and adults is so varied that the mission incumbent on their family and friends is to take very careful note of these individual particularities.

My theories and methods will make available the scientific and human aid, which is equally necessary both for adults and for old people.

The body is so dependent on the mind that there can exist no other form of struggle for youth than that which fights for the body and the mind at the same time.

Woman can be Rejuvenated More Easily than Man

As is almost always the case in great human enterprises, it is the poet, the philosopher and the artist who usually go before the scientist in the conception of the most ambitious dreams; the mission of the scientist is to realize these dreams,

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Let us take, for example, the novelist Balzac. The author of *The Lily of the Valley* has described, in the course of his novel, really heroic efforts to prolong the youth of women, to put off the dramatic moment which rings the knell of youth and supreme charm. He has put the woman of thirty on a pedestal, in an age when, at thirty, one already felt the approach of old age. He has shown quite young men kneeling in adoration before mistresses who could have been their mothers. Writers and dramatists have walked in his steps and have extended to forty and even forty-five the period of the youth of our feminine companions. And following these artists of the pen, custom has finally admitted that nowadays a woman of fifty is no longer necessarily an old woman.

What Balzac and his successors, marvellous magicians of letters and customs, have realized on the plane of the written word, biologists are now striving to realize on the plane of living reality.

For they have at their disposal most of the means for it.

And as regards woman, it is feminine nature itself, with its biological resources (which I believe to be enormous), which constitutes one of these means.

If the misogynists will not take too much umbrage, it is easy to maintain, along with the statisticians of almost all the countries in the world, that women in general live longer than men. As if, by a mysterious decree of nature, their organism is in some way affected by a higher coefficient of longevity. One finds in families, and even in novels and plays, more tearful widows than unhappy widowers. To say of an old woman that she is a widow often goes without saying. But to say of an old man that he is a widower is always a little surprising.

Alexander Bogomoletz quotes comparative cases of feminine and masculine longevity:

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'In the village of Kaplilowka, in the district of Ostesk, lives a woman of a hundred and thirty, Ouliana Yakinrenko; her husband died thirty years ago, at the age of a hundred.'

'Statistics have more than once drawn attention to the fact that the number of aged women is greater than the number of men of the same age. According to the data of the last census in Moscow, on the 17 January of the year 1939, there were fifty-five centenarians (six men and forty-nine women) and 611 people of ninety-one to a hundred (ninety-one men and 520 women).'

What conclusion must we draw from these statements?

Although science cannot claim to have gained any integral knowledge on this point, everything points to the fact that the life of women is longer because they are, more than men, the source of life, the womb from which all existence springs; they are the 'mothers of men'.

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If it is not yet possible to furnish an integral scientific explanation of the reasons for longer life in women, it is not less the case that the hormonal factor is of great importance.

It is very important to note that in man and in woman the presence of hormones of the opposite sex is always established. The proportion varies greatly from one subject to another, but the fact enables us to emphasize that the presence of hormones of the two sexes is an absolute biological necessity for the life and vitality of the organism.

Finally, we must not forget the fact that the sex glands are not alone in governing the sexual condition. The suprarenal glands also assist, and the pituitary, the most important of the endocrine glands, which also governs the sexual life of the two sexes by the action of its own hormones: *gonadotrophins A and B* and *prolactin*.

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The little pineal gland, annexed to the brain, also plays a part in the sexual life of man and woman.

Other hormones will be discovered. But, for the moment, biology is not in a position to throw light on all the mysteries of our sexual life, and it is consequently impossible, until we have further information, to give a scientific explanation of the long life of women.

In these circumstances, it only remains for us to have recourse to the very probable hypothesis that the hormones and other secretions of the female organism are not the only governing factors in the longevity of woman, and that the processes of pregnancy and childbirth have their part by reacting strongly on the biochemical metabolism and provoking an increase in the vital energies of woman.

In fact, the 'weaker sex' have more powerful bio-physiological forces at their disposal than have men.

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When all the therapeutics of rejuvenation have found definite and full application, should we not expect to find in consequence an increase and growth of the coefficient of woman's longevity? In other words, will not the first effect of the scientific miracles which keep happening be to widen the gap of longevity which already separates men and women?

It is a question which the biologist has from now on the right to ask.

A humorist (or a simple arithmetician) could answer: 'What will happen is that during the course of the second half of the twentieth century it will be quite normal to see a pleasing young woman of sixty having a perfect love affair with a very young quadragerian and perhaps she will still find him too "old"!'

But I am sure that the man who answers thus is necessarily

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a humorist. Indeed, the scientist (reckoning the social consequences of his actions) must now make his preparations to fill the 'gap' and avoid the possibility that one day the *dramatic problem of the couple* will have to be faced. In any case—and for quite a long time—the question of the age for love, the age for marriage and the comparative ages of men and women runs the risk of getting a revolutionary reply.

THREE PROBLEMS

*The Human and Social Aspects of the Problem
of Rejuvenation*

THERE IS a social aspect and also a personal aspect of the problem of rejuvenation, and I must confess that I have never managed to decide which of the two interests moves me the more.

Perhaps we might say that the personal aspect touches my heart, but that I occupy myself primarily with the social aspect. Weighed in the balance of a biologist's conscience I think the two ought to be about equal.

Let us first glance at the human side of the problem. It is this which affects us most deeply and most immediately, since it does not require any long-range speculation.

Every day, millions of women, and men, look at themselves in the glass, not necessarily because they wish to remain young and beautiful but because (however strange this may appear at first sight) their future and that of their families depend on their physical appearance. On their more or less grey hair, on the deepness or otherwise of their wrinkles, on the bags, more or less noticeable, under their eyes, on their back, which one day by chance in the unkind reflection of a triple mirror is seen to be suddenly more bowed than usual.

I have received, and continue to receive, letters by the hundred from good, decent people who write that their livelihoods are threatened by the outward signs of their age. Shops and offices do not always like the old . . .

Three Problems

Amongst this spontaneous correspondence I shall never forget the letter from a sixty-five-year-old woman who confided to me her distress—I might almost say her panic—on seeing her grandchildren, with the smiling cruelty of innocence, taunt her for becoming every day older and uglier. Desperately she expressed her desire to become young again in order to please, if only for a few more years, her grandsons and grand-daughters.

How many other women—not yet grandmothers—beg to be given back their youth and beauty to save themselves from divorce or other domestic tragedies, above all to allow them to save their homes and the very lives of their children.

That is the human side of the question—and it is not a few paragraphs but a whole book that needs to be written on this subject.

On that account alone may be justified the efforts, the obstinacy even, of all the biologists, all the doctors and beauticians, and all the ‘externotherapists’ of the future.

No, women are not indulging in a frivolous business when they try to preserve their beauty. And the doctor and the biologist are no more frivolous when they do their best to help them. I am not speaking of those manufacture and trade in artificial beauty but of those who know that you cannot restore a woman’s real beauty without at the same time giving her back her youth and health.

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I have dwelt at length upon the deep legitimate anxiety which today, much more than before, affects all men and women who see themselves menaced by the loss of their youth and physical attractions.

Without being too severe on modern society we can say that in the first place this is all the fault of the times, the fault of a strange, hard, paradoxical age which seems to have forgotten

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the utility of old people and the treasury of wisdom and experience that they represent in a world which, unfortunately, mocks them all the more cynically because it has more need of them than ever.

I said utility. This word was inspired by an extremely good chapter in Professor Charles Richet's book *How to Remain Young*, which appeared right in the middle of the period in question, a chapter with the simple but striking title: 'Old Age in the Present World'. I have taken the following reflections from it:

'The social utility of old people is by no means nil. It could however be made more apparent. We must emphasize that there is at present an intense wastage of humanity.'

Or again:

'Whereas in 1850, or even 1900, industry demanded muscular vigour, today many of our machines are electrically controlled and do not require physical exertions. Therefore aged persons who have kept their brains unimpaired could still manage them.'

I have myself often been struck—I would like to say scandalized—by this human wastage that Richet denounces. There is nowadays, where the social utilization of people is concerned, an undeniable prejudice in favour of youth. This represents, it is true, a reaction against the rule of the old that was triumphant for too long during the last century and the beginning of this.

There is talk today of rejuvenating the lists of serving officers. It seems to me that they are rejuvenated too much, and the experience and level headedness of the old are being thrown in the dustbin. For my own part I believe that the rejuvenation of the old would be a much better business for human society!

No one, in fact, can deny that in countless activities of our

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modern world experience is more precious than youth and that in the long run the knowledge and culture acquired is much more effective than the most hustling dynamism. That is how the social problem of rejuvenation appears to us.

Let us restore to the old workers, whether intellectuals or not, the psycho-physiological forces that will assure a second flowering of mental lucidity. Then at the same time we will have restored much useful strength and enlightenment to a humanity that is more wasteful of humans than certain commercial travellers in the moral and political sciences imagine!

But now the other difficulty, or rather the other unknown element, in the social problem arises. You may hear it stated in conversations at home or in the restaurants and bars somewhat as follows:

'It is dangerous to rejuvenate everybody. What will we do with these crowds of rejuvenated men and women when they pass their eightieth year with a flourish, go on making love at ninety, and are still working at a hundred?'

To such a question there are two answers possible.

The first is that it is not the concern of science, which has only one thing to do: to follow the path of duty, and pursue to the utmost limit its possibilities.

The work of the great Pasteur opened the way for the prolonged safeguarding of mankind by leading the increasingly victorious battle against disease. All statistics (and the papers are full of them) indicate that in the twentieth century men are living much longer than in the nineteenth, that mortality amongst the newborn is receding and that the percentage of old persons is increasing proportionally to the population figures.

Today, biology and medicine have succeeded in stifling numerous illnesses, particularly those caused by microbes. They have worked for the biological security of the human

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species and combated innumerable sufferings which still seemed invincible in the days of Queen Victoria, President Taft and President Fallières.

Following upon the work of Metchnikov and Alexander Bogomoletz there is now the possibility of a *direct* attack upon old age (a disease like any other, as we have seen) and a *direct* solution of the problem of longevity. We can but pursue this path. Who has the right to stop us? Why, and in the name of what?

Perhaps people will say that we should desist because of the peril of over-population which threatens us, or because of the social chaos which may ensue?

But this, I repeat, is no longer the business of science. It is an affair for administrators, economists, legislators, for all those who are responsible for organizing the body politic.

And that is the second possible reply to the 'great question'.

It can be seen that this reply does not invite a solution by eliminating the problem, in other words by preventing people from becoming young again, living longer, tasting the joy of living, from continuing to produce and create for another twenty or thirty years. That would be too easy and, moreover, too stupid!

Society exists for the individual. And the individual does not exist for Society, but for the other individuals who are the members of that Society.

Society therefore must adapt itself, it must organize or re-organize itself. Why should you and I grow old quicker and die sooner because Society may not know how to pigeon-hole us and is too stupid to utilize us fully, which is in our best interest and that of Society itself?

What sort of re-organization? Let us say quite firmly that that is none of our business.

What we do know is that the earth, if properly exploited,

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and its natural and manufactured wealth, if judiciously distributed, can nourish three or four times the number of human beings now living on it.

What we do know again, is that when the 'old' are able to work longer and more easily, Society, productivity and the national budget will benefit greatly from it.

And that is enough for us!

Longevity on the Menu

It is claimed that science today, thanks to the labours of eminent specialists, knows the natural composition of the majority of foodstuffs, and that patient research has made it possible to compose veritable 'symphonies of vitamins' and thus nourish man better than nature and his own instinct working together during thousands of years have ever done. But is it right on these grounds to proclaim, as certain saucepan-and-oven prophets have done, that we can now achieve a universal scientific diet capable of rejuvenating its consumer and even, while we are about it, assuring connoisseurs of vitamin menus a perfect spiritual equilibrium?

Quite frankly, I do not think so!

And there are numerous and very cogent reasons for so thinking . . .

One of them is a very general one, and almost a principle: biology and medicine have discovered a good enough means of prolonging youth and life not to need to appeal for help to the kitchen even if it were shaped like a brand new laboratory with imposing test-tubes to do the work of casseroles and frying-pans.

But there are other reasons infinitely more precise and decisive.

The most decisive of all is that where food is concerned there

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cannot exist any rules which are applicable to all men of all countries in every climate, every environment and every civilization.

It was inevitable that from time immemorial man should be impelled to seek such rules. To understand this tendency we need only imagine the distress and terror of the tribal witch-doctor and the primitive medicine-man on observing that death (except in times of war) preferred to adopt the form of pains in the stomach, vomiting and indigestion. In periods of the highest civilization, in the classic age of Louis XIV and Molière, medicine, i.e. diagnosis and treatment, was still obsessed by its preoccupation with abdominal troubles and its explanations of the working of the intestines. Purgatives, enemas, the mystery of how food moves to the stomach and through the blood, were central to it.

Clysterium donare

Postea seignare

Ensuita purgare . . .

Administer an enema, then bleed, and finally purge: such was the most holy trinity, of Molière's doctor in *Le Malade Imaginaire*.

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Long after Molière and his comic doctors, Purgon and Diafoirus, had disappeared, there came, thank Heavens, the Pasteurs, the Claude Bernards and the Metchnikovs. These authentic scientists did indeed apply themselves to the problem of feeding. To it they brought various ingenious and inspired solutions which in less than a century saved millions and millions of human lives.

But did the combination of all these great men discover the ideal diet, the all-embracing regime which would make the restaurants of the large cities just so many scientific institutions?

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Not at all. And it seems that even certain dietetic principles for well-defined constitutions and closely-studied illnesses that had appeared to be engraved in stone, valid for centuries, are already being vigorously attacked, discussed and criticized . . .

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In fact it seems that the most and the best that science can do in this sphere is to establish certain alimentary 'musts', a number of varied diets for the use of certain groups of individuals, certain races or certain peoples. No more than that.

We may admire the longevity of some vigorous peoples, may count up their centenarians and marvel at their biological soundness, but if we were to eat what they eat, to nourish ourselves upon their national dishes, we would all too soon find our complexions growing pale, our stomachs breaking down and our health being threatened. The truth is that a diet which is excellent for a Parisian or for a citizen of Wigan would undoubtedly be quite useless for the mountain dwellers of the Caucasus or the Himalayas—and vice versa.

I have known personally quite a number of these Caucasian mountain folk amongst whom 'Methuselahs' are so numerous that they have long received close attention from progressive students of longevity. They live among barren rocky wastelands, know nothing of yeast, or our vitaminized vegetables, or the proud products of our culinary laboratories. They feed principally upon mutton fat.

Let us therefore try to live for a hundred and twenty years on a daily diet of mutton fat!

It would also be interesting to compare the food of the Americans with that of the Russians. The differences are enormous and it may be considered practically impossible to impose the diet of an American of Idaho on a Volga boatman!

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Doctor Chêne, a food specialist, stated that 'we must never leave out of account the ethnic origins of subjects' (he is speaking of persons subjected to dietetic regimes). He specified that in France, for example, the northerner must eat plenty of butter while the southerner can neglect butter in favour of lard and olive oil. And he pronounced the following truth: 'These regional habits are often a deep rule of existence, discovered scientifically from cause and effect'.

The fact that culinary regionalism is scientifically necessary is a bitter blow to the apostles of the saucepan . . . !

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With regard to diets, the position of Externalism is extremely simple:

Far from claiming to impose one and the same 'diet of salvation' on all humanity with its tongue hanging out for its spoonful of vitamins, Externalism on the contrary proclaims the need to adapt dietetic regimes to each climate, each country, each individual, each illness and, if necessary, to each physiological and psychological circumstance, whether it be temporary or permanent.

Man is not, we repeat, a mass-produced vehicle that can be fed on one identical 'first-grade petrol' or 'second-to-none motor oil'.

From these remarks you may possibly conclude that there cannot be an unvarying universal diet, capable once and for all of giving humanity happiness and eternal youth.

To those who would pretend the contrary, I would ask them if they believe the moment has arrived to make the Alexander Bogomoletz, the Metchnikovs and the Carrels simply manufacturers of rejuvenating recipes, and to reduce them in fact to the role of kitchen boys of longevity.

To ask the question is to answer it.

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To answer it, of course, in the negative.

Let our recipes remain the good old recipes of our grandmothers!

Rejuvenation a Preventative Remedy for Cancer

My readers may be surprised to see me venture upon the delicate—and dramatic—question of the struggle against cancer, to the exclusion of other grave diseases.

In the chapter dealing with the relationship of old age to the condition of the connective tissue, I underlined the very important part played by this 'fighting tissue' in our cellular fate.

Everybody knows that the young powerful cancer cells destroy the normal cells and end up by forming a tumour. But the cells which were attacked do not let it pass without reacting. On the contrary, they put up a more or less lively resistance. The cells of the connective tissue participate with particular force in this resistance.

That is why, bearing in mind this function of the connective tissue, I desire to link specially the question of cancer to that of cellular rejuvenation, and to attempt to show that rejuvenation is the best means of defence against a disease the causes of which have remained up to the present a mystery to us.

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What is the present state of opinion about cancer?

Since the last World Congress held in Paris in 1950, two principal theories are apparent.

First Theory: Cancer is provoked by a virus (which has clearly not been discovered).

This explanation should be capable of exact proof, and consequently research must be pursued in this direction.

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But why not admit from the start that at the root of the cancerous growth is a certain biochemical condition of all the cells of the organisms which constitutes its principal and primary cause? Having accepted this, the specialists should push their investigations as far as possible, examining the greatest number of known factors and arming themselves with the governing idea that the simplest, most familiar, and least suspected of the factors which make up the pattern of our daily life might be the determining causes of this redoubtable scourge.

Second Theory: Under some unknown influence the biological state of the cell changes and favours the development of cancer.

This second attempt at explanation goes very far and does not shrink from maintaining that a single cancerous cell, concealed for a long time in the organism, one day receives a 'shock' which favours its multiplication, thus leading to a tumour.

For my part I think it is more exact to say that numerous cancerous cells exist in the organism but that they are incapable of multiplying so long as the resistance of the other tissues remains effective. But when under some influence or other, the latter grow weak, the loss of their biochemical balance puts them at the mercy of an invasion of cancerous cells.

However that may be, since these are only theories, the exact causes of cancer are still unknown and we are reduced to making intelligent guesses and blaming diverse factors which are reputed to stimulate cancer.

We know, for example, that certain sex hormones provoke or favour cancer. But we are also aware that cancers are more frequent among persons whose sexual activity is weakening and in whom a lack of hormone balance in the sex glands has been observed, that is to say, a diminution of certain hormones and

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an increase of others. The whole range of secretory exchanges undergoes, consequently, a corollary lack of balance of the normal pristine nutrition of the cells.

The neuro-psychological factor must also be taken into account. Our nerve cells are probably the only ones which link the body with the mind (through the great sympathetic system). These cells are nourished like the others; but we have already asked the question whether there may not exist another extra-corporeal 'food' which is in addition to the already known and analysed nourishment.

The nerve cells do not multiply indefinitely; a part of them dies progressively, that is to say undergoes irreparable biochemical changes. In these conditions it is possible that the weakening of the cells ends up by provoking with age a very serious disharmony in the life of all the other cells and secretions (exchanges) which, growing weak in their turn, give up the never-ending struggle that they must maintain against the cancerous cells which are always present in the organism. In short, the nerve cells may well be, as a result of their degeneration, the indirect but determining factor causing cancer.

Alexander Bogomoletz declared that 'the development of the most serious diseases, bacterial or otherwise, is to a very large degree determined by the cells of the physiological system of the connective tissue which are successfully resisting these maladies.'

And he adds that 'the cells of the connective tissue in a perfect condition are also capable of successfully resisting cancer.'

This truth is equally valid for all the other cells, which with age under external or internal influences lose their original balance and then their pugnaciousness, so making the ground favourable for the growth of cancerous cells.

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I would now like to give my own theory on the struggle against cancer, on the assumption that its cause is unknown and its presence probably permanent in the organism—as is the case moreover with many other diseases—but that some unknown influence causes the cancer to ‘explode’.

I believe that rejuvenation—by whatever method you like, and to begin with, by the Bogomoletz serum—most effectively opens the way, by stimulating the connective tissue, for the re-establishment of the original biochemical balance of all cells and their regular nutrition, creating a greater capacity for combating all illnesses and, to a very large degree, cancer.

The rejuvenated cells are then in a state to fight effectively the cancerous cells and the probable microscopic tumours which already exist in a latent state in the organism.

My conviction is precise and absolute: *if the cells and tissues are regularly rejuvenated by stimulation of the physiological system of the connective tissue a partial preventative cure of cancer has been found.*

Professor Alexander Bogomoletz explained that ‘the connective tissue develops around the cancerous tumour, penetrates inside it and opposes its advance into the surrounding tissues. The connective cells destroy the tumour, either by phagocytosis or by dissolving with their ferments the tumour cells’.

And that has been completely neglected by biological science and by medicine.

In Russia they have recorded multiple cures of post-operative cancers without subsequent relapse or new outbreaks elsewhere when the ‘Bogomoletz serum’ has been utilized. This confirms the point of view that I am maintaining here that the true prophylaxis of cancer is the regular and systematic rejuvenation of the organism before the existence of the diseases has been made manifest.

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While dealing with this problem of cancer, I must now say what I conceive to be the new methods of Externalism and Externotherapy.

It is highly possible, and in any case cannot be ruled out, that the factors weakening the cells in their struggle against the cancerous cells pass through the skin. If this is confirmed as a biological truth (and it will be confirmed) Externotherapy will have to create a compound which by preceding the harmful factors into the inner parts of the organism can oppose the penetration of the cancer-provoking substances, or annul their devastating effects.

In conclusion I would like to cite the example of the Welsh 'healer' Rees Evans, who treats cancer by applying poultices and who thus, without knowing it, shows himself to be an Externotherapist.

Rees Evans' cures are well known, and the British Minister of Health—with proverbial English impartiality—thought it necessary to order a scientific inquiry under the direction of Sir Alexander Fleming himself.

If the Welshman's treatment is shown to be effective, the ideas that I have just outlined will have received confirmation.

THE NEW TRUTHS

What is Externalism?

IN THE first half of this book I have devoted, I hope usefully, a considerable amount of space to the work of the great precursors of Externalism, and to the questions of the skin, heredity, immunity and adaptation, the connective cells which make up our fighting tissue, the nervous system and its extension, the psyche and, finally, the part played by external environment, which it is now the duty of science to assess in all its aspects. I now come to Externalism itself.

What is Externalism?

Despite its final 'ism', it is not just an abstract theory, one of those theoretical explanations which give scope for brilliant feats of juggling with words and ideas but which teach nobody anything of practical value.

Externalism is the result—or such at least was my intention—of the research and experiment done for over half a century by men who had not worked together, but entirely separately, and whose discoveries had not been co-ordinated and directed by traditional medicine towards the already glimpsed goal of human rejuvenation.

That goal is the one I have set myself, and I am reassured in my efforts to attain it by the steps taken by my great predecessors. I believe now that my conception of longevity and the methods which are its natural developments are sufficiently firmly established for me to be able to place them before the

public—before indeed the very widest public, because rejuvenation should not be the privilege of the few. It is to that public that I dedicate my work.

From the earlier chapters of this book you know how Externalism was developed. I now wish to show you what it is.

It is the affirmation, supported by proofs, that the physical and mental health of the individual depends largely upon the external environment in which he is born, lives and dies. Equally dependent on it is the duration of his active strength, that is, of his youth, and also the 'mathematical' prolongation of his existence. So-called civilized man (you and I) finds himself squeezed between the primitive forces of nature and the social, moral and material order that he has partially created and of which he is nowadays a prisoner. Thus Externalism may be said to include that well-known saying of Spinoza's that, 'Man is not an empire within an empire'; the human body is not a kind of small autonomous state within the much vaster state of the Universe. On the contrary, man is infinitely more dependent than he imagines on both the big and the little things which surround him. As I have said before, man is at every moment being attacked, bombarded, dominated and fashioned from outside either by physical or by moral forces. All the 'inside' of a man—digestion, sexuality, thought—is explained and decided by the 'outside'. I do not mean that personal life is only of secondary importance. Externalism does not advance any such absurdity. Externalism merely maintains that it is useless to be preoccupied with man's happiness, his creative faculties and his spiritual needs, unless the elements by which they are more or less mysteriously determined are, first of all, sought for in his surroundings (using 'surroundings' in its many senses: physico-chemical, mechanical and social).

What a vast range of forces surround, assail and harry us on

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all sides; on the one hand forces which destroy us either rapidly or more slowly, and on the other hand forces which sustain us and could be capable of sustaining us very much more powerfully!

'*Could be capable*'! Science was not slow to identify, and then to analyse, all these natural forces. There are, however, gains just as precious which have remained dispersed in the laboratories, experiments and records of the scientists who first discovered them. They have not been co-ordinated and directed into a unified whole which could then become a powerful instrument of action.

For it is obvious that all this should issue in action. It should not remain mere words. Externalism affirms, by its experience, that both kinds of external force—physical and psycho-social—between which man is, as I said before, squeezed, can in their turn become susceptible to scientific methods. We are becoming progressively armed with such methods. We can today watch over these natural forces, follow step by step their effects upon the mind and the organism, eliminate the more harmful among them and seize upon the more helpful; we can, in part, select them, then measure them out and weld them into a set of 'biological rules' whose aim is the 'reconstruction of man' and the establishment of a true 'Art of Living'.

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The time has come to realize the synthesis which constitutes Externalism's principal task. We cannot sit back indefinitely, smug in the knowledge that we have determined the effects produced upon a human being by the climate, the waters which cover the earth, the sun's rays, the vitamins that are concealed in the food we eat and, equally important, the part played in human existence by sexual habits, spiritual nourishment and the evolution of ideas, arts and professions. Out of all this know-

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ledge we must extract practical rules for a new order of human behaviour.

Man is fighting a war on several fronts—and almost every day a new front is opened! Organic exhaustion, mental exhaustion, moral exhaustion and even social exhaustion. Externalism tackles all of these with its methods and practices and proposes the establishment of rules of defence against all the different forms of premature exhaustion, from climatic conditions to personal relationships, from the skin to the soul.

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Not only rules of defence but rules that are meant to encourage positive stimulation of vital energies as well. When I was dealing with the problem of adaptation and the miraculous qualities that the human body in the course of a long succession of century-long struggles against harmful forces has acquired, I said that, despite this hard-won immunity, the organism is subject to systematic and prolonged fatigues: fatigues of biochemical origin, and those of mental origin.

Externalism therefore—and the whole purpose of this book is to prove the need for it—employs a ‘global method’ for the bodily and mental rejuvenation of mankind. By ‘global method’, however, I do not mean stimulative rules and commandments that are applicable to any Tom, Dick or Harry, to the first or the last man in the queue. The Externalist biologist, and the Externalist doctor, must be completely imbued with the very profound truth that I expressed somewhat facetiously when I said that man is not a mass-produced vehicle. There must be almost as many rejuvenating treatments and methods of attack against old age as there are men in the world; or at least as there are groups of men gathered together in the same climatic conditions, having the same racial

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origins, or dependent upon one or the other biological categories (nervous, sanguine, etc.).

In short, there must be as many externalist treatments as there are observed 'Externo-types' throughout the globe.

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By this means the Externotherapy cure (whether medical or natural) will, while conforming to the rules of a global method, possess an eminently individual character.

Like numerous biologists and doctors, I have had to deal with one of the simplest—at first sight—of therapeutical problems; what rules to adopt for dealing with that unavoidable and powerful natural force, the sun?

In order to draw up my 'rules' for sun-therapy, I spent much time in studying the work that innumerable scientists have devoted to the sun and its effects.

They all made useful suggestions. But at the same time they all made contradictory suggestions.

The same might be said about the much-discussed question of whether or not to wear a hat, or of the rules for daily physical exercises.

In fact, all mass-produced advice and all rules for universal application are eliminated from all Externotherapeutic treatment and from any 'Art of Living' that is based upon Externalist commandments.

Some people, in order to live longer, should do gymnastics every day, and some should do nothing of the sort. Some should bask in the sun and some should lie in the shade, some should wear hats and some may go bareheaded or even expose their shining bald head to the sun.

One of the major reasons for this individual approach in Externotherapy is the particularly decisive part allotted to the mind. The mere existence of a mental life signifies individu-

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ality and implies the most striking variations in character, intelligence and sensitivity. It is the duty of Externalism to weld together all these diverse factors, for Externalism proclaims that to a very large and still unsuspected degree the ageing of the mind is not the consequence but one of the causes of the ageing of the body.

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In all that I have said so far I have tried to make it clear that Externalism, as I conceive it, is not just a point of view, more or less philosophical, but is a practical means of fighting the innumerable forces in our natural and social environments—I call them ageing forces—which continually conspire to halve our life-span by making us contract a disease known as old age, with its retinue of attendant evils—organic degeneration, loss of beauty and the onset of ugliness, physical pain and mental suffering.

In order to have the best possible chances of success in this battle I have created four 'weapons':

1. The Externotype Record,
2. The Externodiagnosis,
3. Externotherapy (medical and natural),
4. Externes—natural remedies, applied through the skin and other outer coverings of the organism.

I will end this chapter by saying that I have no reason to doubt the effectiveness of modern treatment of bacterial diseases; on the other hand, I have serious doubts of the effectiveness of modern methods of fighting the non-bacterial diseases of degeneration.

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The Externo-type A New Collaboration Between Doctor and Patient

Modern medicine is acquainted with the 'bio-type' and knows how to determine what type every individual belongs to from his general morphology.

It is this system of bio-type classification which permits the discovery of existing illnesses or the predisposition to morbid conditions and diseases.

The detection by a great variety of physical signs of certain organic weaknesses, diseases and predispositions is part of current clinical practice. In some way these signs appear to become engraved on the whole surface of the body, the skin, nails, hair, and even the body structure itself, together with physical attitudes, intonations of the voice, gestures and facial expressions.

Hundreds of such clues permit the discovery from the outside of hidden ailments and internal troubles. It is true that this science is still very young, but the road along which it is travelling—the road of the detection of illness by means of the general appearance of the individual—is a very promising one.

Medical morphology was born only thirty years ago as a result of the work of French, German and Russian scientists. Morpho-physiology developed out of the work of German and Italian doctors. It is a truly international science.

The doctor who uses its methods makes an external examination of his patient in such a way as to give him a complete picture of the patient before every clinical examination. After that he is fully able to make his clinical investigations and arrive at a diagnosis—and vast it is if it is done properly.

But a great step has been taken. By this method the patient's organic physiology is probed much more thoroughly than by

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the all-too-orthodox method of asking the invariable question 'Well, and what's the matter with you?'

In many cases, and almost always in all serious cases, the patient has all the difficulties in the world in saying what the matter is, and above all of giving any immediately useful indication of his condition.

In my method, which I repeat is intended not only for sick people but also for healthy ones, and even if need be for persons hursting with rude health, the ultimate goal—the postponement of old age—cannot be achieved by compromising with such unsatisfactory practices.

I need infinitely greater detail. I must know the man's past and present, both in their physical and mental aspects. I must learn how he behaves in different environments and different climates, his power of resistance, his diverse psychological reactions. I must know how, when and why he works, and also how, when and why he plays.

How, in practice, can I arrive at this result? As you will have guessed, it is not a task that can be done alone.

It is because it is the surest and the only effective one that I have chosen this way of collaboration between doctor and patient, who becomes in fact the doctor's assistant by fulfilling his part of the task—*observing himself both physically and mentally under guidance.*

To facilitate this collaboration I have created the 'Individual Externo-type Record', a document containing a number of questions which, although simple enough to answer, are of prime importance to the doctor. From it he will extract the particulars which will be most useful to him.

It is in effect a method of establishing an individual dossier, as vast and complete as possible. The questions which are asked constitute a searching inquiry. One or two decades of prolonged youth, a few additional years of a better balanced

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life are well worth the effort and labour of the task—an exact and detailed task, but an engrossing one, as much for the doctor as for his ‘assistant’.

The ‘Individual Record’ aims to provoke a new habit in the art of diagnosis and in that of therapeutic rejuvenation: noting, observing, analysing and finally recording all the manifestations and reactions of the body and the mind.

The observation should not be confined to phenomena of an exclusively pathological order. Quite the contrary, for the apparent signs of flourishing health may be the real signs of some bad condition, either now or in the future.

My wish is to ‘reconstruct’ the individual and to prevent his degeneration and ageing—which are no longer inevitable—and to make him, up to a certain point, his own reconstructor.

You who are reading this book have the means at hand of establishing your own Externo-type Record, thus providing the basis for a later and more complete diagnosis. Your doctor will examine all its useful elements so that he may conduct a proper Externodiagnosis which will bring together your observations and his own. From this collaboration and co-ordination he will discover the kind of general stimulation which exactly suits your temperament, character, age, state of health and your mental and psychological type.

You must never forget—and I am very conscientiously warning all the authors of lightning miracles—that youth cannot be recovered simply and solely by the use of remedies, were they perfection themselves. The knowledge and enlightenment that the patient’s self observation and its interpretation by the doctor furnishes are an absolute *sine qua non* condition of the proper use of such remedies.

I might state here that even a treatment of almost universal application such as the Bogomoletz serum must take individual

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behaviour and reactions into account in order to attain the maximum benefit.

Very powerful methods of treatment—to name only the Bogomoletz serum and Voronoff's grafts—have not always yielded the results expected of them, and in certain cases there has been no apparent reason for their failure.

The reasons are known now. The important preparatory work of physical and mental observation which leads to the determination of the Externo-type has not and in fact has never been done.

Today the methods which offer certain similarities with Externotherapy are only used in the extremely rare cases of old people and aged invalids who are so rich that they can afford a whole team of doctors to attend them. Even then it is necessary for at least one of the doctors to have made an exhaustive study of the life and behaviour of his client and to show enough authority and reforming zeal to be able to impose upon him, when he already has 'one foot in the grave', a complete reconstruction of his way of life and reactions to his psycho-physical environment. Then, but only then, will the treatments prescribed have any effect.

It is said that in certain countries these methods are used by teams of specialists of every kind who watch over important persons in such a way as to discover rules of conduct which will allow the prolongation of these precious lives.

This brings me to the very point I started from when I created Externotherapy. My wish was to universalize the technique of rejuvenation in such a way that the millionaire and the dictator are not the only ones to profit by it, but also Miss Jones and Mr. Smith and their country cousins.

The first and greatest advance will be made when the doctor, breaking away from his former customs, will admit that without the closest collaboration of his patient, and without

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unprecedentedly intense investigations, he is making his diagnosis and writing his prescriptions in at best a half-light, even in the case of diseases that have been closely studied and for which we already possess sure treatments.

There is no better and more useful way of beginning a new era of regeneration and new health than with the Individual Externo-type Record to which I shall later devote a special section.

Externodiagnosis

Unfortunately it is not possible, in a work of such modest dimensions, to explain in great detail the methods for establishing Externodiagnosis which constitutes the principal 'connecting agent' between the general methods of psychological stimulation and the dominant characteristics of the individual to be 'rejuvenated'.

Externodiagnosis will demand from the practitioner a task as wide as it is complete and detailed. The Externotherapist should first study in the greatest detail all the indications which are given him by the subject himself, as a result of his self-observation, indications of primary importance for the doctor, who will *complete* this study by the usual methods of clinical investigation.

An absolutely indispensable element of Externodiagnosis, *an element without which nothing can be done*, even from the physiological, biochemical and clinical points of view, is the gathering, under the form of analysis, of all or nearly all the psychological manifestations of the subject (healthy or sick).

Externodiagnosis should, in short, establish:

1. The purely physico-psychological condition of the organism: diseases, general weakness, capacity for defence and

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organic or functional troubles, not forgetting the morphology (bio-type) and former illnesses with an indication of the treatments undergone.

2. The bodily condition from the point of view of usual reactions to environment, to food, work, tiredness, climate, etc.

3. The psychological condition, specifying the reactions of the subject to the happenings of everyday life; to the rhythm and conditions of work; as also his sexual, domestic and social behaviour.

When I speak later on of the organization of clinics or hospitals for Externotherapy, I will specify these Externodiagnostic problems, with a view to determining particularly through how many 'investigation services' the subject must pass, and how these services will undertake to establish diagnosis and treatment.

Let me emphasize (or re-emphasize) that I do not advocate here a 'new medicine', and above all that I am not seeking means by which the doctor can avoid the most detailed work. The truth is exactly the opposite.

I believe that it is necessary in any case to draw particular attention to mental reactions and manifestations which are useful in Externodiagnosis, since it is scarcely the custom to include this data in an 'orthodox' diagnosis.

One could make a list, which would not necessarily be limited, to which the doctor could have recourse to enable him to uncover the psychology of the patient for all useful purposes.

I would like to quote some of the psychological signs which are essential in order to characterize a given individual: sensibility, sensuality, timidity, sincerity, brutality, will, cowardice, courage, prudence, hardness, generosity and, as objectively as possible, an indication of their intensity.

These psychological manifestations and reactions cannot always be ascertained by means of self-observation. For a

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great number of them, the indications furnished by the patient's associates will be indispensable.

So, reinforcing one another, the subject and a friend or friends will finally draw up a 'physiognomy' from which the experienced Externotherapist will be able to draw practical conclusions.

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Natural Externotherapy and Medical Externotherapy

IN ORDER to prevent any misunderstanding at the outset, I think it is necessary to emphasize that the method of combating old age which has emerged from my work, and to which I have given the name of Externotherapy, does not exclude in advance any of the known forms of therapy. It tends, on the contrary, to achieve, as the economists would say, their integration, after having laid down precisely and estimated exactly their respective roles, especially after having assigned to them a new order, a sort of hierarchy so far unestablished.

It is precisely towards the re-organization of this therapeutic hierarchy according to the real biological hierarchy revealed in the course of fifty years of research by people such as Metchnikov and Filatov (and that is why I have quoted them at such length at the beginning of this little manual of rejuvenation). It is with a view to this indispensable task that Externotherapy began its work.

Let us collect in a brief table the principal points of this re-organization, which are already scattered more or less throughout the preceding chapters. What is necessary in the light of biological knowledge is the following:

1. To take into consideration the entire life of the patient, whether he is ill or not, his interior life and his multiple reactions; that is to say, his daily behaviour.

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2. To start a preventive and permanent collaboration between the doctor and his patient.

3. To combat not only illnesses, but above all the degeneration of the body in considering present-day human ageing as premature, and believing old age to be an illness related to cellular and humoral degeneration.

4. To choose as a way into the organism the natural openings offered by the teguments and by the skin. In view of this slow, equal and 'shockless' penetration, to compose the maximum of external remedies.

5. To treat the various illnesses according to a variety of methods and remedies but without ever forgetting the organic and mental ensemble.

6. To admit as a most important reality that the surest direction of the fight against the most diverse type of illnesses is that of the regeneration of the vital forces of the organism; that is to say, the arrest of old age or, as people like to say, rejuvenation.

7. To believe as a biological certainty that the regeneration of biochemical forces is made possible by the stimulation of the physiological system of the conjunctive tissue (this is the discovery of Alexander Bogomoletz).

8. To prescribe for each patient the things which are imperative for his physical and mental behaviour. The commands of Externotherapy which fit in with the needs of his physiological individuality, his externo-type.

9. To protect man against the negative influences of nature.

10. To take into account his predispositions, his surroundings, his work, his distractions, as well as his sexual life.

11. To consider the intervention of a psychiatrist and even of a psychologist in every case as technicians of 'normal psychology'.

12. To fight against the majority of exterior signs which

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mar anyone's appearance by identifying them with pathological states which must be treated and eliminated.

This list of basic principles allows us to prove that Externotherapy is divided into two branches:

Natural Externotherapy

Medical Externotherapy.

The second of these makes use of the first and commands the general treatment.

But natural Externotherapy by its character allows especially the formulation of advice and the defining of a group of commandments of vital interest outside applied medicine.

Natural Externotherapy, or the Art of Keeping Young

I would first of all like to explain why I believe it is possible to assimilate natural Externotherapy with an art of living, or even more precisely, with the art of keeping young. For the moment we will only concern ourselves with the first words, 'the art of living'.

Set in this way the problem has nothing sibylline about it and is not an enigma. Natural Externotherapy is the art of using the riches and forces of nature, selecting them and arranging them in practical roots of self-observation and self-direction; that is, in indicating the positive or negative characteristics for every case and every individual, and in fact of formulating finally the general commandments which each of us must obey if he wishes to put off physical and mental degeneration for any appreciable time.

Natural Externotherapy is, therefore, also the art of knowing how to protect oneself against the destructive or degenerative forces of external surroundings.

The list which is given later on of the twenty-four commandments of Externotherapy includes those which make use of

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the general principles and which are consequently valid for all of them.

Natural Externotherapy can itself be divided into two parts:

- (a) The art of using physical factors
- (b) The art of using mental factors.

In the first of these the factors to be used are sunshine, mountains and sea; atmospheric pressure, winds, heights, humidity, dryness, cold, heat, waters and mineral waters. One can obviously add to these the food factors, but it is impossible to describe in a popular book of a few hundred pages the entire scientific data about food, even from the single point of view of Externotherapy.

I have already set out in a separate chapter my attitude on diets, explaining in particular that efforts which have been made to institute a universal diet, that is, one applicable throughout the world (from the Chinese to the Americans, from the nervous type to the lymphatic type, from the intellectual to the manual worker) are completely useless.

As far as this is concerned a few rules drawn up by Professor Alexander Bogomoletz can very well take the place of miracles:

‘Normal digestion is very important as far as long life is concerned. Food must be healthy and simple . . .’

‘Erasmus, the celebrated author of *In Praise of Folly*, said: “My soul is Catholic and my stomach Protestant”. And he obtained from the Pope permission never to observe fast days. . . .’

‘It is harmful to eat to the point of total saturation. I recall a French proverb: “To grow fat is to grow old”.’

Obviously for Alexander Bogomoletz the question of what to eat should be kept in its proper place. This place is not important because it does not show any new way towards youth and long life.

I decided to refer to this problem here so that I need not

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come back to it in the commandments, but the question of food appears also under another aspect which cannot be neglected; that is the mental aspect.

In fact the pleasure of eating a good dish, whether it is habitual or rare, plays its part in the favourable disposition of the organism. Unless there are specific medical contra-indications, why deprive a man of a satisfaction which is so natural and so efficacious for his general equilibrium?

As far as food is concerned, as in many other domains, I refuse to terrorize the individual by rules which are too strict and rigid. You will easily see this in my commandments, and above all do not pay any attention to the prophets who try to convert you to the religion of planned diets.

At this point I address myself directly to the reader:

Natural Externotherapy involves commandments which will not necessarily deprive you of certain satisfactions, on condition, obviously, that you will not go to extremes in the opposite direction.

For the same reason do not spend hours in the sun simply because other people do. It is possible that your organism has a particular aversion against sunshine and you should respect your organism above anything else.

Do not eat 'brewer's yeast flavoured with celery and mixed with unsweetened pineapple juice' if you do not like it or if it revolts you. 'Tastes are so different and so complicated.

Do not calculate the proportions of vitamins in each type of food that you eat and you will not live any shorter time, believe me, than all those who listen to the nonsensical preachings of the vitamin prophets.

In food, as in all other mental and physical conduct, everything is very relative. Never become like mass-produced cars and the slaves of rigid rules. Your cells and your 'humours' have absolutely nothing in common with steel, which is created

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artificially and assembled by the fantasy and genius of man himself.

Finally, do not forget that the mental element is at least half the story in the work of protecting or winning back your physical health.

You can rest in the most clever way on a plank of wood, you can clench your fists or not, or breathe in this way or that way. You will not stop degeneration of the body if all the scientific factors, physical and mental, which are capable of stopping it are not brought into action.

I also offer you with my Externotherapy commandments an 'art of keeping young', but you will see that it is a question of very simple commandments which do not include any rigid rules, which are often unbearable for certain natures.

The effects of natural Externotherapy are double:

The elimination or weakening of the aggressive or underhand influence of natural forces which can be negative (one could also say degenerative) in one particular case and for one particular type of mind, justifying these findings by the observations of the patient himself (self-observation) and by the observation of his doctor (externodiagnosis).

Systematically prescribing and organizing certain changes of surroundings, of type of life, of the rhythm of existence in order to allow the forces of nature to act in a positive way on the individual. Remedies of natural Externotherapy on a big scale will be called 'stages of health and rejuvenation', and measures which are kept small on the level of everyday life will be called 'changes of surroundings'.

Throughout my commandments I try to keep in order these last measures, since it must be understood that for important radical remedies the completion of the individual externo-type dossier and the participation of the doctor remain the essential factors for the efficacy of the treatment.

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In the chapter devoted to 'The Stages of Health' I draw up recommendations as universal as possible, but always taking account of the fact that people are not mass produced.

Such are the very general and very simple data concerning the principles of natural Externotherapy in its *physical branch*.

Let us now pass to the *mental branch*.

In the first part of this book I spoke to you about 'mental nourishment'. For anyone who has not read those pages it will not be easy to understand what I mean by 'mental nutrition'. If it was possible to say all that in a few words I would say that the mind gets its nourishment, like the body, in different ways and that its nourishment should be analysed and then controlled in both a general and a particular way.

It is evident that mental nourishment includes all the manifestations of human thought and all the factors of a man's surroundings which are capable of having an influence on the mind of any individual. These factors concerning surroundings are extremely varied, but it is only in proceeding to the study of particular cases that their ensemble can be used in a way affecting the person to be treated.

This does not prevent in any way the art of living from formulating recommendations which are valid for the large majority, taking into account only factors which are common to the mass of people. These factors are known, but Externotherapy takes them in hand and tries to extract from them real mental remedies.

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I allow myself here to include a parenthesis to the effect that it would be an excellent idea to create a specialized Institute with the aim of supervising the physiological and mental reactions of different types of people, men and women, to different natural influences. This is an enormous task which

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we cannot carry out alone but in which science can and will one day play a part.

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Among the mental remedies which can be taken from the outside world are personal relationships. They are more difficult to codify in the form of general commandments because the individual angle is so important here. Music, poetry, literature, theatre, cinema, lectures, sports and all manifestations of cultural and social activity constitute the other mental nourishment and remedies.

The objectives which Externotherapy seeks to reach in exploiting all the factors of the mental surroundings are:

The re-education of the intelligence, judgment and will-power; the elimination of factors likely to engender anxiety, unhappiness, worry, boredom, etc.; the control of the factors which can influence in a positive way the mental state of the individual; the elimination of mental fatigue which is harmful both to the body and the mind.

We have described in a special chapter the scientific proofs that every influence, whether physical or mental in origin, is capable of releasing at every moment from the physiological chain reactions in the most delicate functions of the body.

By means of the nervous system, the centre of the life of exchanges and reactions, mental influences act themselves on these exchanges and reactions, modifying or even transforming them.

Let us recall what has been said in the chapter devoted to immunity: the organism is capable of immunizing itself and adapting itself to physical influences, but it is much less certain that the organism can adapt itself and immunize itself against harmful mental influences. On the contrary, it is very quickly weakened under the weight or the blows of purely mental factors.

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And it is on the possibility of using the mental influences themselves in the treatment of old age that every description, even brief, of natural Externotherapy should finish.

The justification of this therapeutic method is contained in these few words: mental fatigue hastens the onset of old age.

All these physical or mental factors, like all chemical remedies, can kill a man just as, if they are administered in doses, they can become a powerful stimulant. The problem is not one of the suppression of the factors in question but of the method of administering the dose. The commandments of Externotherapy are the first result of this dosing.

Alexander Bogomoletz said: 'There must never be any total saturation.'

In my turn I declare that all the physical factors of nature and the mental factors of social surroundings must be administered in doses in order to make them stimulating.

Medical Externotherapy

The entire range of medical discovery, all the arsenal of modern therapeutic methods are at the disposal of Externotherapy, which only attacks things which should be attacked, or things which are unorthodox or obviously phoney, and only wishes to revise methods of treatment and assess their efficacy in a new way.

Externotherapy only intends to reduce or moderate applications, which are often too brutal, of remedies and treatments, because it believes that the natural forces of the organism are not sufficiently respected by applied medicine; this is because medicine does not adapt itself in every case and at every moment to the imperative necessity of conserving the bio-physiological powers of the body.

Each chemical remedy is taken in order to provide for the

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organism this or that specific assistance. The same is true of vaccines and serums, as well as of hormone remedies. But too often people overlook the degree of humoral and cellular weakening suffered by the organic whole following the repeated and systematic use of products and substances of chemical origin.

At every moment doctors found themselves facing the harmful effects of different remedies or even of accidents resulting from the application of vaccines and serums.

Why should it not be said that certain people searching for the secret cause of cancer have serious reasons for supposing (with powerful arguments on their side) that the administration of vaccines and serums, while combating a certain illness or morbid state, prepare the ground for cancer? In my view this hypothesis is very plausible, for these remedies and preventatives, while weakening the original biochemical powers of the human body, facilitate at the same time the spread of cancerous cells.

The practitioner of Externotherapy believes, therefore, that a revised outlook is necessary in the first place, and that after that an immense regenerative undertaking is possible in the application of different groups of remedies through the skin.

Of course, not every remedy can penetrate the skin, but many experiments, including especially those I have conducted myself, have made clear the surprising truth that numerous substances can regularly and systematically penetrate to the roots of the organism through the skin.

Going even further, it can be said that penetration through the skin is often more powerful (in the case of sexual hormones, for example) or much more regular. The skin, which is an endocrinal gland, is capable of preserving certain substances and making a stock of them, then transmitting them systematically to the endocrine system and the tissues.

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In classical methods injections penetrate very deeply. It is in this way that substances are sometimes injected directly into the blood, even when it is not really necessary. There is no natural filter or barrier in this type of injection. Filters and barriers do exist, however, in absorption through the mouth, and they are extremely powerful and efficacious in the process of absorption through the skin.

What I state here does not in any way signify that Externotherapy is opposed to injections. The reason is that numerous substances cannot be efficaciously introduced through the skin because they do not penetrate it, as the skin remains semi-permeable.

One of the aims of medical Externotherapy is the gigantic task of taking a revized view of the possibility of 'reshaping' substances in order to get them eventually into the state when they could penetrate the skin. It is known that the skin can be prepared, that is to say, put in a state suitable for maximum absorption. With some substances it will be necessary to introduce chemical factors specially destined for making the skin easier to penetrate. This is already accomplished.

In the Caucasus, and in Persia particularly, we have noticed that various illnesses are cured by the application to the patient's body of skins of animals removed immediately after death. It is interesting at this point to quote a method used by the peasants in the Caucasian Mountains: wild animals are beaten for several days, the skin is then taken off and applied to people suffering from rheumatism. Let us remember also here Filatov and his discovery as to how cells which are 'suffering' give off positive substances possessing a rare power, substances which are also soluble in water.

Externotherapy also permits the use of all medical methods which involve the forces of nature.

Medical Externotherapy takes into account for the purposes

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of integration the other branches of applied medicine such as cosmobiology, hydrotherapy, electrotherapy, actinotherapy, homoeotherapy and 'acupuncture' (this latter is Externotherapy *par excellence*).

From the point of view of controlling the biological state of the individual, Externotherapy uses the micro method of analysis as far as possible. The results of this method allow us to establish the exact balance of vital potential in the individual which is the faithful reflection of his health.

I must insist on the important role played by the endocrine system which, as a whole, dominates through its production of hormones (and these are not yet all known) the health of the body and the mind, that is to say, also the process of degeneration and the entire phenomenon of old age.

I have already said that we do not believe in the possibility of warding off old age by means of hormone treatments. I have said also that the only way of obtaining this result is by stimulating the root of the organism, that is to say, the physiological system of the tissue, a stimulation which is transmitted to all the other tissues, 'noble' or not noble.

I would like to refer to one of the most widespread illnesses, diabetes. Except in rare cases it is an illness which attacks old people and it appears when the pancreas begins to fail in all its duties by producing no more insulin. The deficiency is made up by injections but, as Alexis Carrel says, it would be better still to find a method of making the pancreas start its work again.

We believe therefore that diabetes, like many other illnesses, can be avoided if one starts early enough, while the patient is younger, by fighting against old age and all the symptoms of degeneration. In other words, the prophylactic treatment of diabetes is preventative rejuvenation. This treatment is in the same way valid for all the endocrine glands which fail in their duty of producing hormones.

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The reader must know that the role of hormones is to stimulate through the blood the special functions of the cells. Hormone, a word of Greek origin, means 'a stimulator'. The 'noble glands' are firmly surrounded with connective tissue.

I wish, therefore, to emphasize that medical Externotherapy must of necessity take into account very strongly the endocrine system and the production of hormones. Sexual behaviour also finds an important place in Externotherapy, and in order to resolve the problems of mental sexuality we apply hormone treatments, but we administer sexual hormones in doses and we carry it out entirely through the skin.

We are, in fact, certain that the communications between the endocrine glands are double: outward and inward, that is to say, from the hypophysis by means of other glands with internal secretion towards the skin, and from the skin to the hypophysis itself, and from the infundibulum centre in the direction of the brain.

In other words, the specific externs of the future applied to the skin will bring into action the whole of the endocrine communication system. I repeat, therefore, that through this means of the skin, which is in fact an endocrine gland, we have the means of applying hormone treatments and watching them more easily. We believe, in fact, that other methods are somewhat brutal and even arbitrary, for we cannot know exactly the necessary dose needed of this or that hormone.

Finally, another and extremely important problem presents itself, that of the innumerable chemical substances which we use as much in medical practice as in the simple hygiene of every day. I believe that it is necessary to proceed to a new examination of all these substances in order to determine as exactly as possible how far each of them influences this or that function, and also what effects they have on cellular life and on the humours, for there is no doubt that by stimulating any

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function certain substances only weaken cellular life, exhausting it, or even, on a more or less long-term basis, destroying it.

For those of us who fight for the most complete integrity of the biochemical state of the cells and humours and against degeneration, this question is absolutely vital.

Through the 'perfect cellular approach' we give to the vital forces the only really efficacious methods of fighting against this degeneration and at the same time against the most varied illnesses.

In concluding this section I will permit myself to appeal for the help of all men of science, since the role that my collaborators and I have assigned to ourselves is out of proportion to the efforts of a handful of research workers, even though they are as decided and as sure of their result as we are.

We only ask to share our work with all other pioneers who, like us, wish to fight against the serious illness of premature old age and against the biological injustice of premature death.

The Externs

The Externs in use at the moment constitute the first proof that the application of specially composed substances to the skin can rejuvenate the exterior tissues.

The externs are not a secret, they are not a miracle. They are composed of natural living substances mixed together in such a way that they can penetrate the royal road of external therapy: the skin.

I have consciously used the most simple products in order to show clearly that their application on the epidermis can give obvious and visible results. The appearance of youth on the face of a woman who is no longer young is the only admissible proof, but once it is there it is incontestable.

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The rejuvenation of the exterior tissues is no longer doubtful. It remains to prove that organic treatments and especially cellular and humoral treatments can, on the whole, be composed also in a way enabling them to penetrate the skin.

It is now well known that certain hormones can penetrate deeply and influence glands, communication systems and the most important organs and tissues. It is held that this penetration is much more real, efficacious and much more 'interior' than that attained by injections. This assertion is correct.

For our part, we believe that in facing this problem energetically, in fact squarely, we will solve it and prove that many living and synthetic substances are capable of penetrating deeply and influencing parts of the body after having first penetrated by the skin.

I am equally sure that many substances are harmful for the organism and that modern science will be obliged to take vigorous action and look more closely at all those which are used in daily hygiene, in cosmetic sciences and for all sorts of external uses. In the same way there should be urgent reconsideration of all mechanical influences to which we are submitted every day from the dyes of our clothes, from the products used for washing them, etc., and the innumerable solutions of every sort destined to be used on the various surfaces of our bodies.

How many so-called inoffensive substances can provoke eczemas of various kinds, how many others penetrate far into the organism where they can carry out destructive work on the organs and tissues without anybody noticing the reflection of this on the features or the epidermis?

It is possible that hundreds of chemical substances are capable of leading to experimental cancer or helping its development; they therefore penetrate deeply within the body. What unknown destruction is caused by other substances? This is an urgent problem which science must solve.

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Let us come back to the externs. As has been shown in this book, I consider my externs as the first weapons in the fight against old age and towards rejuvenation; they are a practical method for repairing the damage and also a preventative treatment. My first formulas (externs for women) aim at influencing the skin (the teguments) directly by a direct stimulating action on the tissues in order to re-establish their original state. In these externs I do not use any substances which are exceptionally powerful and yet I can really achieve a rejuvenation of the tissues. Thousands of women who have undergone the extern treatment can already give evidence of these undeniable results. The only exceptions are some extremely rare cases of allergy.

I am continuing my work in order to be able to devise many other externs, both medical and non-medical. I am especially occupied with this latter problem and I hope that I can continue to prove that exterior treatments are, or can be, more useful than remedies used internally.

It is useless looking for the secret or a mystery in the struggle carried out in this way against old age: by means of the derma, which is rich in connective tissue, we can stimulate the vital forces (cellular and humoral) of the body. This is the biological truth which is behind my search and that of my collaborators. This is the truth that we owe to Alexander Bogomoletz.

Many doctors and research workers know what extraordinary results can be obtained by the use of powerful substances capable of penetrating the skin, and especially what these results would be if we could manage to obtain penetration of other substances which are more difficult to handle from the penetration point of view. This is an immense task which can be carried out with a definite end in view.

It is necessary to remember that certain molecules are too

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large to penetrate the skin, but that different methods in certain cases can already make them do so.

I have also studied and perfected methods of preparing the skin so that its capacity for absorption will be much stronger. Others besides myself have also arrived at similar results.

However, research for perfecting methods of preparing the skin should be pursued, for the method of penetration by the skin will always be more easy to use and more evenly spread than any other.

The externs will not always be in the form of pomades or creams. I must, however, explain to the reader why my first externs are creams.

I realized at the outset that if I wanted to persuade women to try out my preparations I would have to present them in a manner which fitted in with feminine habit. Women have used creams for centuries, but it was especially after the First World War that the cosmetic sciences persuaded an immense public of women to use creams, and they can now no longer do without them. Make-up is firmly established in the feminine world and I had to take this into consideration. I had, therefore, to present my products in this form so that women would not have to give up their former habits, nor use other creams at the same time as they were undergoing my treatment.

I have, therefore, divided this treatment into two parts, night treatment and day treatment, and I have added a liquid which replaces all the so-called make-up removers and which especially, and I emphasize this point, 'opens' the skin for the substances I have composed.

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In the very near future—and perhaps even before the publication of this book—the externs for men will see the light. I will limit myself to saying that men also can undergo rejuven-

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ation exactly like women. No one has any right to oppose such an enterprise. Our ancestors, the Egyptians, Greeks and Romans, used creams and liquids, and they remained virile and capable of heroic actions. This historical reference serves to show that modern man can also use creams without being regarded as decadent (the externs for men will be in the form of cream too, since they are obtained by introducing certain chemical changes into the externs for women).

I would like to add that sporting journalists have often made me vividly aware of the tragedy of champions who, throughout their exploits, never cease to provide for the public one of the spectacles which our twentieth century seems so hungry for: the sight of courage, endurance and victorious physical self-denial.

These champions are worn out very quickly, but I believe it is possible to preserve their youth and their capacity for sport much longer. My externs for men will be useful to them, but I know also (and this concerns them no more as men, but as sportsmen) that their muscular efforts automatically lead to an auto-intoxication of their muscles (and of their other tissues) by the formation of lactic acid, which is the result of a lack of oxygen.

Since the work of Pasteur and Meyerhof it is known that the food of the muscles is glycogen, but prolonged work leads to an asphyxiation of the muscles; waste is formed following the expenditure of effort, and there must be a sufficient quantity of oxygen to burn up this waste. In a superlative muscular effort the quantity of oxygen is not sufficient. As it functions the muscle gives off two waste products: hydrogen and carbon gas. The hydrogen combines with the oxygen and produces water, but during moments of great effort a certain quantity of hydrogen does not find enough oxygen. The hydrogen then mingles with pyruvic acid, one of the hundreds of acids which

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are found in the body; this mixture forms lactic acid, a poison for the muscles and one which leads to fatigue. These are the biochemical causes of muscular exhaustion.

A means must be found of keeping the hydrogen away from the pyruvic acid and then making it combine with something else in order to form a non-toxic substance.

The extern for sportsmen produces this effect and replaces the lack of oxygen. Applied by massage it increases the vital potential, for the substance which is produced in the muscles is a natural stimulant which has nothing in common with the drugs which are often given and which lead to a sudden spurt and then tire the organism.

This substance formed by the application of the extern for sportsmen is also very useful for the entire organism.

The externs for sportsmen will eventually be brought into use, but there will be numerous hold-ups of a legal nature which will prevent their use from being widely spread for the time being.

When discussing sportsmen who reach the end of their career too quickly it should never be forgotten that with sportsmen, as with anyone else, the mental side plays an important part. For the externalist the sportsman is a patient like the rest, and as a result he is subject to all the methods of treatment used in medical and natural Externotherapy.

Finally, I am absolutely certain that the serum of Alexander Bogomoletz, if it is applied systematically to sportsmen from the age of twenty-five, or even before, can maintain much longer with perfect integrity their cellular and humoral state. The reason for this is simple: the Bogomoletz serum is not dope but the most direct form of attack against all forms of old age in man, both physical and mental.

In conclusion I would like to emphasize once again that my externs will fall into two categories: medical externs and non-medical externs, a distinction of great practical importance.

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Everything that I offer to the public at the moment is non-medical, but I hope one day that I shall obtain the means and the necessary assistance in order to produce the medical externs without any hindrance or obstacles.

I must also say that the externs will not always look like ointments. There will also be liquids, compresses, poultices, etc. Some of them will be used in baths, others in a series of drops, or in a single drop on the skin, and others still in the form of powerful douches. Everything will depend on what part of the body is their destination. I shall continue for the moment to produce non-medical externs for universal use so that everyone can buy them, use them and have direct proof for themselves of their results.

The Externotherapy Clinic

I hope that I have made it sufficiently clear why and how, by the use of simple externs destined for women and which the chemist sells so that they can be directly used at home, all the teguments, when they are revitalized, take on again the glow of youth and —let us say it without forcing either the words or the reality—rejuvenation.

I only regret that this treatment—which is not composed of medical substances—is at the moment produced in quantities too limited for the struggle, and with the aid of the public I would like to use them in the struggle against old age over a large area of humanity.

For the methods which I have attempted to perfect are not in any way limited to a narrow field. I have acquired—I should even say I have conquered—the sure knowledge that Externotherapy will become a new branch of medicine as soon as the creators of its methods prove scientifically, that is to say,

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by positive results and living examples, that it is possible to cure old age, to bring back the energy for work, the pleasure of living, and creative lucidity to men who are threatened with its loss. It should be well understood that results as complete as this cannot be achieved only by the application of externs, without the co-operation of the doctor and without the organization of a systematic fight in every sector of general health.

Let us repeat it therefore: the final and total avoidance of old age cannot be obtained by means of a simple elixir or by this or that miraculous remedy, but by co-ordinated measures of which only the global combined use can accomplish the miracle.

It is for this purpose that I have been thinking for a long time of the creation of a clinic of Externotherapy, the first clinic where traditional scientific medicine working in alliance with our methods will prove the possibility of rejuvenation by tangible facts.

As far as the methods of application are concerned I consider the discovery of Alexander Bogomoletz concerning the role of the connective tissue remains the royal road to follow faithfully and obstinately, while all other methods should take into account this completely decisive discovery and subordinate themselves to it in some way.

We shall add to this 'mental treatments', without which the mere stimulation of the cellular equilibrium, even if magnificently achieved, could only achieve a partial success or even a total failure. The first clinic of Externotherapy would be directed by externotherapeutic doctors. Patients would be observed and then they would follow a complete cure of Externotherapy.

Let us imagine that this first clinic existed and describe it as it should be under ideal circumstances:

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Specialist doctors would collaborate with it and only common assent between them would decide on each individual case. The practitioners who bring their patients to them would certainly have their say, but they would not take decisions. Decisions can only come from the specialists attached to the Externotherapy clinic.

The clinic has its different departments and also its research bureau. Clinical findings should be entirely respected. Externodiagnosis, treatments, and above all 'commandments' would become a basis of conduct for the patient or for the healthy subject for his entire future life.

The Externotherapy clinic would be, in fact, the centre for the practical application of all the scientific ideas and methods that we have discussed during this book: the role of the skin, the establishment of the externo-type, externodiagnosis and medico-mental treatment.

Its specialists, therefore, would be doctor-biologists, bacteriologists, aestheticians, psychiatrists, psychologists and even lecturers.

This clinic would not be a prison where patients are confined to their rooms, kept in bed and handled like objects to be cured and submitted to the subdued terror of the rules and regulations.

If we want to fight to maintain bodily or mental health or else to win it back, the first thing to do is not to imitate nursing homes and sanatoria.

It is a question of establishing every condition needed to place methods of rejuvenation at the disposal of patients; these methods must be exactly suitable for their case, for their organic individuality and for their past, which never stops dominating their present, and for their whole mental state. Otherwise failure would be inevitable in the final aim, which is not to cure a definite illness and to prescribe this or that specific

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medical treatment, but first and foremost to get rid of the menace of degeneration and to arrest the process of ageing.

For the information of the sceptics I will add that there is a country where medical 'Centres of Longevity' have been created. These organizations are provided with every means of investigation, supervision, study, diagnosis and experimentation in every domain of general health and morbid state of old age.

This example should be followed throughout the entire world. 'Centres for the war against old age and for the encouragement of longevity' should be created everywhere. The Clinic of Externotherapy could become the germ of the World-wide Organization for Rejuvenation.

The Stages of Health and Rejuvenation

I have given the name 'Stages of Health and Rejuvenation' to a branch of Externotherapy which aims at achieving all-round health by the rational utilization of the *positive forces* of nature.

Throughout this book I have already made a point of explaining how external forces influence positively or *negatively* the biophysiological functions, which in their turn adjust themselves or adapt themselves, but at the same time weaken under the effect of the scattered degenerative causes in the *milieu* where the individual develops.

The various chemical substances, rays of light, water, degrees of temperature, etc., are harmful when they attack the organism *en masse*. On the other hand, if they are selected, measured and administered in doses, they become in the majority of cases real natural medical aids.

If their application to the organism is well directed, these

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forces become stimulants which allow the organism to react against the destructive elements in the surrounding *milieu*.

This is equally valid for mental development, which remains in all externalist medicine, as we have seen, inseparable from general health and has a powerful influence on the physiological fighting forces of any man.

I think it might be worth while here to recall what I mean by the outside *milieu*; this is the climate and the physico-chemical elements of the district where an individual lives, his work, his pastimes, his family and social surroundings.

There has been today an important development in tourism: people travel, they change their surroundings, they have a 'change of air'; but how do they decide on this travel? Travel agency prospectuses, prices, the easiness of currency exchange, the accident of reading something or hearing something in conversation where individual imagination comes into play—all these factors determine a choice which is almost always a matter of chance. These journeys are never organized in the name of biological necessity and they are never measured out or administered in doses, as all true medical treatment should be.

I do not in any way object to the interest and importance of present-day tourism, for it is very true that even when people choose their change of air entirely by accident there is always some mental nourishment which is created by new impressions.

But I have often wondered while I was creating the methods of Externotherapy if all these moves and changes of place and climate, these journeys of escape, would not gain by being organized with careful consideration of the biological necessities of each individual with a view to stopping his medico-organic degeneration.

I think that this should be done. We all know that when they return from any journey or holiday people come back in

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better health, and very often certain troubles, and even certain illnesses, disappear as a result of staying 'somewhere else'.

The secret is not only in the change of air but also in the change of *milieu*, and, let us repeat, in the renewal of the mental nourishment.

It would take too long, and it would at the same time be useless to discuss in detail a problem stated in this way and to describe how I came to the conclusion that from the point of view of the struggle for the youth of the body and the spirit we can regulate, direct and 'dose' our travelling. Each individual—and my conviction in this respect has been scientifically established—can be led now to organize his movements according to the precise rules of the 'stages of health' or 'hygienic tourism'.

This is possible, not only within each country, but between one country and another, or for individuals who are healthy or ill, young or old, in every part of the world.

The externotherapeutic doctor should be in a position from now on to indicate to people which journey and which change of air would be best for them from every point of view for their general health.

Externotherapy regards this new science as one of its weapons.

I have worked and I am continuing to work at the establishment of a world map of these 'stages of health'. It will be accompanied by notes and classifications which will make it easy to consult. Each person, starting from precise individual indications, will be able to see in which category he is, and he can also get to know the possible destinations of his journey for 'the health of the body and the mind'.

Any Norwegian or Egyptian intellectual will be able to tell scientifically in what country or in what climate he would find the most perfect rest. A manual worker in any given

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industry would be able to find the same information in the same way.

The time will come, perhaps, when health organizations will take in hand this information to patronize and, when necessary, organize themselves with all their means these 'stages of health and rejuvenation'.

Since I am faithful to my methods my duty is to elaborate the general principles, which must be understood by everyone, which will become eventually the guide of these 'stages of health'.

I am sure that in the many countries where paid holidays have become a legal application the people reserve their strength in a way much more radical than by taking medicine. But I believe also that if these holidays were organized, taking into account the most favourable destinations, the results would be infinitely more satisfactory.

In this book I cannot give more precise details on the subject, but I intend to come back to it when I publish my *Chart of World Health*.

At the moment men of goodwill are being asked to establish collaboration between different people. Efforts are being made to unite together in the fight for a better life, for the happiness of the weak, the poor and the humble. Cultural exchanges, contact between men of science, writers and artists is being intensified where possible.

Would any permanent and vigorous international collaboration for the safeguard of the health and youth of every individual in the world be less useful?

A health organization under the aegis of U.N.O. is carrying out this task, and this organization is no doubt the best for achieving for people who cannot allow themselves long holidays these 'stages of health and rejuvenation'.

The different countries of the world can and should make

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agreements between themselves in order to achieve these 'stages'. They should organize 'health relations' as they have already organized 'commercial relations', 'monetary relations', 'postal relations' and 'cultural relations'.

The Principle of the Stages of Health

A certain number of regions in the world, because of their climate and other natural conditions, have been much talked of as health-giving places.

In their turn these places are grouped according to the interest they present for the type of illness to be treated and the different psychological fatigues to be cured.

Adolescent boys, young girls, or older women, when at different stages of their lives, workers and intellectuals, would find in this way the necessary conditions for establishing their general health. It is through these journeys that an adolescent girl would go through the stage of womanhood and future motherhood, the quadragenarian would go through his stage of being a mature man, and the septuagenarian his stage of being an alert elderly man.

Age, sex, origins, work, education, etc., become indications which are important for determining proper places to stay.

Other factors taken into consideration are the temperaments of different people and different races, the nature of the climate where they live their food, and the many other different influences which model their personality, physical strength and mental state, etc.

The *World Health Chart* on which my collaborators and I have been working for a long time will soon be placed at the disposal of both doctors and the public. It will be the first step in this direction.

But there are still too few of us and there are still immense

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tasks to be carried out in order to realize this great project for natural regeneration of men and women.

If travel can form youth it can also recreate it. The association of biology and tourism can do a lot to prevent the onset of old age.

The 'Individual Externo-type Record'

It is by means of the Individual Externo-type Record that the collaboration between the doctor and the patient, which is one of the keystones of Externotherapy, will take concrete shape.

It is intended to constitute a proper dossier of *self-observation* and *self-supervision*. If you fill it up carefully, you yourself, quite apart from the doctor, will have brought together the first essential elements of the Externodiagnosis.

Moreover, and let me say this at once, the Externo-type Record is not meant only for mature and ageing people. It is intended just as much for the very young and the very healthy.

Whoever wishes to safeguard not only his or her youth but those other elements of happiness and self-achievement that we call beauty, intelligence, creative power and sexual stability, must remember that the decline begins early on, in the very dawn of life. Longevity must conquer from the beginning. The Record is one means to this.

Old age, in fact, is an illness that is much better prevented than cured.

Above all, do not be afraid, when you fill up your Record, of becoming one of those medical maniacs that we see so often in books and plays! You will not be running any risk of that sort.

On the contrary, the use of the Record will lead you to observe yourself at every level of reaction and behaviour. So

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much the better for knowing yourself. Over two thousand years ago Socrates advised 'Know thyself'. He meant, know what is believed to be inside the body—the mind. But today we know very well that the body and the mind are very closely linked, that they make one and the same thing, and that (from the point of view that concerns us here) they grow old together, or grow young together.

The Record—if you wish to make use of it—will therefore oblige you to answer a certain number of questions which form part of the complete knowledge of yourself. It will be the record of *your own* Externo-type and that is why it cannot and must not be filled up by anyone except yourself and the doctor who knows you best and best understands everything that differentiates you from other people. Each one of us is unique.

Individual Externo-type Record

I. GENERAL INFORMATION

Height

(Preferably with heights of both parents, especially if there is any great difference between theirs and your own)

Weight

(Taken each week over a month, and indicating any important changes in the course of the last few years)

Age

Are you fat or thin?

(At what age did you begin to grow fatter or thinner?

Was it a result of illness, mental or other factors?)

Give any serious illnesses of your parents, and if possible of your grand-parents

What illnesses did you suffer from as a child?

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Any prolonged medical treatment since the age of 21, and causes of it
Any medical treatment or medicines regularly used now
Vaccinations and serum injections since childhood
Approximate age of puberty and its development (in particular the appearance and development of body hair)
State of health during any course of study
The country and type of climate in which you spent your youth up to the age of 21 (living conditions, changes, moves)
Nature of any studies undertaken. Degree of success or failure
Present employment
Serious surgical operations that you have undergone
All IMPORTANT mental and psychological events, past and present

2. SKIN, NAILS AND HAIR

State of the skin over the whole body

Colouring

- Reactions to various external contacts
- Congestion or pallor (tendencies to, and causes of)•
- Reaction to cold and heat
- Perspiration (degree, and causes of)
- Sebaceous elimination of the face (fatty excretion)
- Special marks on the face and body.
- Skin diseases (of the whole body)

How long do cuts and wounds take to heal?

How long do they bleed

Bruises (ecchymoses): do you bruise easily?

How long before bruises disappear?

Pimples, warts, acne, cellulitis

Eyelids (wrinkles under the eyes)

Genital organs, nails, hair (full details)

3. EYES

Abnormalities, congenital or acquired

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Sight

Condition of the whites of the eyes (conjunctiva)

Reaction to sun

Fatigue

Diseases

4. HEARING

Diseases

Reaction and sensitivity to noises

5. NOSE

Shape

State of the Membrane

Frequency of Colds

Tolerance or dislike of different smells and perfumes

Operations undergone

6. MOUTH

State of gums and mucous membranes

Degree of development of taste

Sensitivity to different temperatures

7. TEETH

General condition

Colouring and shape (changes and irregularities)

Number of teeth

State of teeth during childhood

8. THE HEAD

Frequency of headaches (known causes, appearance, duration, where located, development, etc.)

Different causes (sun, noise, after mental effort, etc.)

Factors that help to make the headache disappear (rest, medicines, change of air, walking, etc.)

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9. MENSTRUAL PERIODS

Regularity of onset

Amount of discharge

Discomfort experienced

Mental and sexual disorders (and all other details that you have observed)

10. DIGESTION

Appetite

Hunger (regularity of meals, spontaneous hunger, rapidity of satisfaction)

Greediness

Usual foodstuffs

Quantities consumed of: bread, milk, meat, fats, vegetables, preserves, sugar, drinks

Indigestible foods

Frequency of indigestion and other pains

Mastication (quick or slow)

Persistence and nature of certain tastes

Dryness of the mouth (frequency, duration, known causes)

Salivation

Thirst (frequency)

Illnesses of the digestive canals

Influence of changes of climate on digestion

11. BREATHING

All details that are easily observed, all noticeable difficulties

Influence of change of climate, temperature, place, upon respiration

Causes of breathlessness

12. MORPHOLOGY

Skeleton (full particulars of bone structure)

Length of limbs

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Development of thorax, skull, abdomen, bust

Condition of muscles

13. SEXUAL LIFE

All physical, physiological and mental details

14. MENTAL AND INTELLECTUAL LIFE

Nature of work

- Capacity for work
- Liking for, interest in, dislike of, your normal activities at work
- Hygienic state of work-places (air, light, etc.)
- Degree and rapidity with which you become fatigued

Reactions to aesthetic, emotional, artistic, and cultural factors

- Music
- Literature (type: romantic, scientific, philosophic, thrillers, etc.). Impressions left by reading and how long you retain them.
- Fine Arts: state type, with details; explain emotions experienced and their duration, the sensation of aesthetic 'appeal' and degree of intensity
- Lectures: state whether you like to listen to them or if you can read them when printed
- Radio and television: the programmes you appreciate most

Choice of amusements and forms of relaxation:

- Passive ones (reading, odd-jobs, etc.)
- Theatre, cinema: what type of performance preferred; fatigue felt, emotions aroused; how long do you retain impressions, etc.
- Active ones: sport, strolls, walks, visits to cafés, bars, restaurants
- Dancing: what dances do you prefer, and why?
- What emotions do they produce, and why?

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Mental tendency towards optimism or pessimism

What importance do you attach to pleasure and 'sex appeal' from a mental point of view?

Nature and duration of mental rest. What conditions are necessary for it
Frequency and type of dreams (pleasant, unpleasant, nightmares)

15. SENSITIVITY TO EXTERNAL INFLUENCES

Behaviour and reaction to sun, wind, rain, heat, cold, etc; to changes of atmospheric pressure, climate and place

Behaviour and reactions in different types of places

—Forests	Psychological
	Physical
	Intellectual
	Sexual
—Mountains	Psychological
	Physical
	Intellectual
	Sexual
—Seaside	Psychological
	Physical
	Intellectual
	Sexual
—Towns	Psychological
	Physical
	Intellectual
	Sexual

What holidays do you prefer? (time of the year and region)

What kinds of baths do you prefer? (sea, river, showers, etc., and at what temperature do you like them)?

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The Rules of Externotherapy

THERE HAVE been frequent references in this book to the rules prescribed by Externotherapy which should be followed by everyone concerned with the health of his whole being.

Before giving you these rules for a healthy life I wish to emphasize that I do not claim to guarantee youth mathematically by means of them alone. But I consider that their application in your physical and psychological activities will assist your organism to struggle more effectively against the progressive weakening of your vital forces.

I have already explained at length that an efficacious fight against old age depends upon behaviour, scientific investigations and treatment. I have also said that although man is not a 'mass-produced vehicle' general instructions can nevertheless be established to form the basis of a healthy way of life. When dealing with particular cases, the doctor should never prescribe them *en bloc* without making the necessary adjustments.

Thus your conduct, being governed by these rules, will have prepared you to a large extent for the struggle of preserving your youth.

In order to enumerate my rules I have been obliged to divide them into two groups—physical and psychological. I have not, however, been able to eliminate absolutely from the first group the psychological element which enters into it, our health

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and our behaviour being tributaries of these two interdependent factors.

Since my rules are general instructions, I have, in setting them out, taken account of the inevitable actions of daily life. Therefore I shall speak of bodily attentions, food, dress, physical exercises, sexual life and work.

I follow these with recommendations for the psychological life, accompanied by examples.

If certain suggestions seem obvious platitudes they are no less worthy of observance, for they get their value above all from being set in relation to the others and according to a law of quantities.

The Twenty-four Commandments of Externotherapy

But before giving these rules it would be advisable for you to know the general principles, the commandments, in effect, which constitute the basis of my methods. These commandments are as follows:

I. The body and the soul (mind) are inseparable, and these two elements must be considered as a whole.

II. Any arbitrary intervention in the life of either of them which does not take the other into account may lead to a loss of balance in the vital forces of the whole.

III. The health of the organism is reduced by psychological sufferings just as much as by age and sickness.

IV. The preservation of psychological forces demands respect for the natural functions of the organism.

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V. The organism itself is endowed by nature with powerful forces of self-preservation.

VI. Human beings must be helped, but one must avoid setting them upon a course of action that may bring about a change in their existing stability.

VII. Even in the case of organic disorder, the organism does not require direct intervention in its particular functions, but regulation of conduct and scientific stimulation of the cellular and secretory cells of the whole.

VIII. Positive intervention in a single function may often disturb the balance of the totality of functions.

IX. Scientific intervention in the functions must always respect the general balance.

X. Respect your body yourself. The preservation of youth and vigour is compromised by the brutal and arbitrary interventions of numerous actions of daily life.

XI. The most accurate conception of hygiene is cleanliness. So-called hygienic or sanitary interventions carried to extremes or repeated too frequently may throw out the bio-physiological balance.

XII. Pay careful attention to the demands of your body. Respect these demands and do not refuse to satisfy them.

XIII. Sleep is the best and most effective remedy for preserving your health. Do not struggle artificially against sleep, or you may harm your physical and psychological health.

XIV. Do not forget that the organism never does anything that may be harmful to it. Help it, but do not force it to work without reason. Remember that the body is not lazy, but it may be ill. Do not force it to adapt itself to unnatural activities

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which you think may be useful. You will only succeed in fatiguing it without obtaining any results. You must realize, in fact, that external interventions oblige the body to react, for every stimulus provokes most varied physiological reflexes.

XV. All arbitrary intervention in the psychological life must be prohibited. That is an essential condition of health and stability. The psyche is an individual factor, and in intervention that may be favourable for some may be harmful for others.

Similarly, in your physical life, watch over the demands of your nature and your feelings. Give your psyche the 'nourishment' that it requires. But never forget that any exaggeration is damaging and that even positive factors may become harmful.

XVI. The rules of the higher morality that have been inherited down the ages are always factors of psychological satisfaction. Therefore fulfil these moral duties, even when they may go against your own desires. But you will only obtain useful satisfaction for the whole of your being by giving your innermost approval to moral laws. As long as you regard morality as no more than a 'policeman' you will never have good psychological health.

XVII. Your circle of friends and acquaintances is your psychological environment. Feelings of mere tolerance with respect to that environment are extremely moral, but may be harmful. So look for another psychological environment which will balance your customary but eventually harmful environment. Above all, do not, without a very good reason, tolerate friends and acquaintances who do not suit your psyche. In personal relationships, respect the spontaneous requirements of your psyche.

XVIII. Resign yourself to inevitable happenings. Resignation is a psychological force and a positive factor.

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XIX. The joy of living is a natural manifestation of the psyche and a profoundly moral feeling. It comes from spontaneous satisfactions and not from preconceived acts and plans.

XX. Signs of physical and psychological fatigue are proofs of weakening of the general health.

XXI. Types of relaxation which benefit some people are useless or even harmful to others. Never impose them either upon yourself or upon others.

Spontaneity in the choice of amusements is essential.

Life forces us to meet obligations that are sometimes opposed to our temperaments. They must not be made worse by imposed relaxations.

The importance of relaxation is enormous therefore, but you must know how to choose the type you need.

XXII. Will-power and strength of character should not be consciously aimed at. If you possess them, use them, but it would be harmful to strive for them to the detriment of your natural tendencies.

XXIII. Scrutinize your actions, analyse them, re-examine them and try to subordinate them to moral principles.

XXIV. Never forget in your physical life that all exaggeration is harmful. Nature has given man sufficient self-control for him to be able to limit his pleasures. Will and determination alone constitute a preventive measure.

The Care of the Body

In setting forth these suggestions I have chosen the rhythm of a day, the period in which we consume the energy that we recoup at night.

This is the rhythm of that day:

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Waking up

If the sun has risen by the time you wake, do not go to sleep again.

Do not get up in a hurry and rush about. Walk round your room slowly for several minutes.

Do not have breakfast in bed. On waking, drink a glass of fresh, but not cold, water, if possible with a slice of lemon. Fruit juice on waking is *not* good.

Do not do physical exercises immediately, but walk a little, using slow and well co-ordinated body movements. A few deep breaths (breathing through the nose with the mouth shut) in front of an open window are equally recommended.

Bath

This may be replaced by a shower, or by washing all over. The temperature of the water must be agreeable to the body, neither too hot, nor too cold. Extremes of water temperature provoke in fact an artificial acceleration of the blood-circulation and a useless shock, which result shortly afterwards in physiological fatigue.

Before soaping yourself, lie in the clear water for a minute or two. Wash your body without rubbing too hard. Do not use hard gloves or brushes, but a sponge.

Do not use a shower-bath with powerful jets.

Do not change the temperature of the water.

After washing with soap, rinse your body with clear water.

Cover yourself immediately you step out of the bath. Do not dry yourself without a wrap, even in hot weather. But do not rub hard: it is useless and tiring.

Finally, do not begin your physical exercises immediately after a bath.

A good many people do not have their own bathroom. It is absolutely necessary to have a proper bath at least twice a

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week. It is not however indispensable to bath in the morning. In the large majority of cases, on the contrary, evening baths are more indicated, especially in the heat of summer and in winter when it is cold.

At all times I regard it as superfluous to bath twice a day.

By the way, never dip your face in water in which you have taken a bath. The face requires quite different attentions from the body.

Frictions

As with baths, these must not provoke an artificial blood circulation, for this device is paid for a few hours later by increased fatigue.

Liquids with a high alcoholic content should not be used in frictions. Do not forget that your skin is an organ like the others, and more important than is generally thought.

Except in certain particular cases I regard highly alcoholic frictions as harmful. The body does not need artificial circulation of the blood. Do not forget that when you use liquids the skin absorbs numerous substances and transmits them deep into the organism.

Finally, it is useless to powder the skin.

Your Hair

Wash your hair once a week. Comb it slowly, without pressing too hard upon the scalp. Contrary to accepted beliefs, friction of the scalp does not help to preserve hair.

Brush your hair slowly with a gentle pressure, for a short time.

The problem of care for the hair is too complicated to be dealt with here. It is however my contention that all methods in use today lack any scientific basis.

Extreme caution must be observed when using the various

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chemical or electrical treatments that are recommended so highly for the care and preservation of the hair.

There are millions of white-haired women and bald persons living in the world, and the 'specialists' and vendors of 'tonics' have failed to stop the loss or even the greying of hair. Baldness and grey hairs occur in people of all ages who are thus suffering the effects of the ageing of the organism.

Since Metchnikov at the beginning of the century announced his theory on the causes of hair turning grey (a theory based upon the cellular thesis) no one has been able to refute it.

According to Metchnikov the medullary cells which exist in the hair systematically 'eat' and 'swallow up' the pigment carrying it away elsewhere. He called these eater cells 'pigmentophages'.

This confirms the theory according to which these little 'animals', the cells, live, move and cause trouble in our biochemical life.

From all that I have just said you should be able to realize that this problem cannot be resolved by 'tonics' but only by a complete scientific attack.

I allowed myself this slight digression to show that I advise the utmost caution with regard to the hair.

Above all you must have the greatest confidence in the organism's vital forces rather than attempting interventions of your own which are often very harmful.

Your Nose

You should breathe exclusively through the nose and not through the mouth. Frequently it is the bad state of the nasal apparatus that prevents correct breathing and not habit, as is generally supposed.

In the morning it is useful to 'free' the nose by dropping

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into each nostril a little water, slightly salted in summer and, in winter, oily substances.

At bed-time pay particular attention to your nose which must be free to be able to breathe easily during sleep.

Equally you may make use of medicinal drops but these must be recommended to you by your doctor.

Physical exercises

Gymnastics are a branch of 'physical exercises'.

I strongly advise you to perform all physical exercises very slowly and do not allow yourself to get tired.

Hundreds of methods are recommended. The majority of them are useful and logical, but their promoters almost always forget that each exercise must take individual peculiarities into account.

I am convinced that everyone's nature demands this or that movement and forbids others.

Do not believe that it is necessary to increase progressively the duration of these exercises. Your organism will certainly endure it and accustom itself to it—but it will become fatigued.

A few minutes (five to seven for healthy individuals and less for the not-so-rubust) twice a day are sufficient, avoiding always all violent movements. (I am not talking now about the people who wish to reinforce their muscles just for the sake of looking strong!)

Exercises must be performed in absolute harmony with breathing, which must remain stable. As soon as you notice your breathing becoming accelerated stop the movements and replace them by others which do not affect the respiratory system.

Do your gymnastics after your toilet and your breakfast, before you get dressed.

At night, repeat these movements before going to bed, but when you feel too tired, stop.

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If your doctor prescribes more intense gymnastics, do them in the afternoon between the mid-day and evening meals.

But do not forget what Alexander Bogomoletz said:

'Deep breathing is necessary to prevent the vitiated air remaining in the lungs, and to enrich the blood with oxygen . . . Gueneau regards the lungs as a veritable fountain of youth . . .'

I shall end this section with some other words of his:

'Gymnastics and massage are very useful in the struggle against blood stagnation in certain parts of the organism.'

Walking

To be healthy, walking should not be done too quickly, but regularly with an even rhythm of pace. Find the rhythm that suits you and then keep to it.

Avoid provoking unnatural breathing and, if possible, sweating.

At the first signs of fatigue, stop for a few seconds and reduce the pace. But you may be sure that if this rhythm has been properly established you will not be tired even after a relatively long walk.

Only the very young can allow themselves long walks in the country. So do not be proud of a ten mile march if you are no longer very young. On the contrary, your organism will have gained nothing by it.

Do your best to avoid swinging your body when walking. Avoid also swinging the arms, this provokes useless fatigue by increasing the rhythm of breathing.

An hour's walk a day is absolutely obligatory.

In the winter your feet must always be warm, so clothe them comfortably.

Dress

The principles of dress are so well known that I will limit

myself to saying that you must always dress in such a way as to avoid perspiring. With the changes in the seasons progressively take off or put on clothing.

How many attacks of chill and influenza are in fact caused by hasty and ill-considered 'casting of clouts' at the onset of good weather! Your organism is adapted to a steady temperature. Try therefore to maintain it and not compromise its stability by thoughtless actions.

Keep your feet warm. The English custom of wearing woollen socks is excellent. I would particularly like women to remember this.

Vests are very useful because they preserve the stability of the body temperature. Wear woollen ones in winter and cotton in the summer, but in the latter case only when the temperature is high enough; it is necessary for perspiration to be absorbed.

Gloves are an indispensable accessory for preserving the hands when they are in contact with objects which may carry germs of the most varied infections.

Finally, it would be necessary to devote a whole chapter to hats in order to demonstrate their usefulness.

I think that the disappearance of men's head-wear is due quite simply to snobbery. For centuries people covered their heads whatever the season. On the other hand, no-one nowadays has preserved his hair by 'liquidating' his hat and no one has seen his hair stop turning grey by remaining bareheaded. On the contrary it is possible that the rays of the sun may cause harmful biochemical upsets and variations by penetrating an unprotected scalp.

In conclusion I consider that at all seasons some covering should be worn on the head to protect the back of the neck from solar radiations.

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Fatigue (physical)

In the rhythm of a day, you must **never** neglect rest **after** meals.

If you go to bed late at night, rest for an hour after lunch and try to sleep.

If you get up late, rest twice a day after each meal.

Rest after lunch is very important. Many people, however, as a result of their occupations, cannot return home at **this** time. So I recommend to these persons as a substitute for **this** rest to remain quite still for at least a quarter of an hour, sitting on a chair with the legs extended and the neck resting on the chair back. Follow this rest with a short and very slow walk before starting work again.

Food

I have already explained my point of view upon this subject at two points in this book.

It must not be forgotten that, according to Alexander Bogomoletz, 'normal digestion is of great importance to longevity'.

I wish to quote several remarks of this great student of rejuvenation about food.

'It is incontestable that a diet in which meat predominates must be avoided. Albumens are necessary for the reconstruction of the albumens of the cellular plasma, but only a small quantity per day is required.'

'To overcome expenditure of energy it is better to use fat and carbohydrates (butter, bread, vegetables, sugar) which are transformed in the organism into carbonic acid and water.'

'It is very harmful to eat until you are "full".'

'The bowels must be opened at least once every twenty-four hours.'

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Thus, in a few words, Alexander Bogomoletz reduces almost to nothing all the most imposing theories of the 'prophets' of dieting. Some often go as far in their fanaticism as to claim that regulated and directed dieting alone can prevent the appearance of cancer.

As if that problem could be solved so easily!

I must emphasize that I do not set myself against reasonable régimes, but I do deny 'universal régimes', and stipulate 'individual régimes' for every particular nature.

As far 'as drink is concerned, drink sufficient, but do not overdo it, whether it is a question of wine or water, especially once you enter the forties. A quantity of liquid should be fixed for each individual that must not be exceeded.

Sleep

Sleep is of capital importance. Sleep assures rest to all functions of the organism and above all to the nervous system. Physiological fatigue of the latter must be avoided and fought against. On the state of the nervous system depends the success of the struggle against ageing.

Please understand that you *must* sleep for seven or eight hours in every twenty-four. The half hours of rest after each meal may of course be included in these hours of sleep, but only on the express condition that you really have slept.

Sleep with the windows open, but if that is impossible in the very coldest weather, air the room before going to bed.

You must be well covered while sleeping in order to maintain a stable body temperature. There is no need to think that in winter you must sleep in unheated rooms; you will not be any the better for it.

It is healthy to sleep in the nude, in a light gown or in

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pyjamas, but take off any undergarments that you have worn during the day.

Finally, do not forget to perform your complete toilet before going to bed.

Sexual Life

Tens of thousands of pages have been written on this subject by the most learned of men.

Certain of them have maintained that sexual life dominates man's physiological life and that by re-establishing the sexual powers, even artificially, one can re-establish . . . youth.

I do not intend to write several chapters on this important problem but will be content to give some simple rules. Thus I am not afraid to say that the sexual life is a very important physiological function, *but it is not the most important.*

A normal sexual life is a necessary function, but excess leads to senility and degeneration. It must not be forgotten that sexual functions which are not excessive are preserved much longer, and in this case longevity profits greatly.

On this subject, Alexander Bogomoletz said:

‘. . . Nevertheless its (sexual life) *unnatural* transformation into a source of excessive enjoyment, its abuse, brings on *exhaustion of the organism and its premature ageing.*’

If you pride yourself upon your sexual ‘prowess’ and believe that you are ‘on top of your form’ because your sexual desires are frequent, you are much mistaken!

Many physical and psychological illnesses inspire this artificial power but at the same time your organism may be very weak and even diseased. Virility and sexual desire are *not* proofs of your vital forces.

Sexual activities, like any other, must be ‘regulated’ and also

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dominated by yourself. Your judgment must order your sexual life; sex must not control your will-power.

I cannot within the limits of this work develop fully this important problem, but at all events I can give you these rules:

I. No sexual saturation, either for a man or for a woman.

II. Sexual appetite must be dominated by the will in order to avoid excess.

If you wish to live younger and longer, never forget that you must avoid saturation.

Put the sexual life in its proper place—as one of the physiological functions of the organism.

You will be committing a crime against yourself if you try to increase your sexual capacity by drugs or physical stimulants.

Next, respect the sexual life of other people. They have, like you, a physiological right to refuse the sexual act.

In conclusion, you must find within yourself the necessary strength to avoid exciting yourself unnaturally and to curb your desire in order not to accomplish the sexual act at its first appeal.

Work

This is a subject which is of paramount importance in everyone's life.

Before I give you my rules I would like once again to quote Professor Alexander Bogomoletz as an introduction.

'Work is the first principle of any life. The whole organism must work, all its functions must be performed. None of them should be taxed to the point of exhaustion. Any abuse of a function, whatever it may be, extreme gluttony, sexual

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excesses, exaggerated strain at work, inevitably lead to premature old age. Even when you are at work, you should always stop and rest immediately you feel tired. Rest should really be the prevention of fatigue and not its cure.'

And again:

'There should not be any difference between the life of the intellectual worker and that of the manual worker. Scientists and scholars should not forget their muscles and their blood stream any more than the manual worker should stop being interested in science and artistic creation.'

My rules regarding work are as follows:

I. Any work whatever, even intellectual, means physical effort.

II. Any position of the body which is retained too long is tiring in the end. Every hour, you must change position for two or three minutes, stand up or sit down.

III. The position of the head is very important. Try to keep it bent forward as little as possible.

IV. Use interruptions in work to perform a certain number of *very slow* movements. No violent gymnastics, for that is useless.

V. After the mid-day meal, take a short walk, maintaining an even steady pace.

VI. If, when working, you feel distinctly fatigued, lay your head back, resting it on the back of a chair, or supporting the nape of the neck with your hands, for two or three minutes.

VII. Relaxing does not necessarily mean lying down; remain motionless, seated or standing. Try to discover for yourself the most favourable position of relaxation.

VIII. If your work has to be done in silence and does not allow you to talk to other people, have a chat with somebody

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during the breaks. If the position is reversed, do not speak during meals and breaks.

A little distraction, even a little cheerful gossip, for example, will be healthy.

IX. Find out what rhythm of working tires you least. Your organism is capable of adapting itself to every rhythm, but that is harmful for it. Once you have established a rhythm do not change it.

X. The leaders of any undertaking must establish a programme of daily work for themselves. Too much haste and disorder upset the psychological balance.

XI. If you work in town and if you move about frequently, try to establish a rhythm and keep to it. Stop every forty-five minutes and remain still for two or three minutes, or sit down.

Fatigue comes from excess of work or from the nervous character of your actions.

Work that you do in the house—especially if you are a woman—is a job like any other.

Everybody, quite apart from his work to earn a living, must find a supplementary activity which will provide a diversion.

No man, however highly placed, should be ashamed to do work which pleases him.

The individual who does not work ages more rapidly. Idleness and lack of work are the enemies of health. The organism has a 'heredity' thousands of years old which demands work in man.

Work which produces creative satisfaction is necessary, for creative satisfaction is a very positive psychological factor.

Persevere in every job of work, for the satisfaction of success does you good.

Thinkers and creators must not force their talent when they

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experience difficulties in their labours. They must stop work and start again later. Creation demands in effect a bio-physiological state that is peculiar to each person, and it is necessary to discover this moment of psycho-physical balance.

Managers and all who have employees or workers under them must not create arbitrary systems of working, for it is the stable health of their subordinates which brings success.

Finally, if you work in one of the liberal or creative professions, do not forget that overwork upsets and paralyses you, lessens your health and weakens your creative capacity.

Sport

At the beginning of this chapter of rules I spoke of the 'rhythm of a day' and recommended the daily practice of gymnastics for several minutes.

This is a recommendation which applies to everyone: men and women, young and old, healthy and sick, big and small, strong and weak; but it must be understood that gymnastics have nothing in common with the physical culture which a sportsman adopts for preparation and training purposes. Furthermore, I must add again that it is not necessary to overdo muscular development. That is not a sign of health.

In fact exaggeration in any form leads to saturation. Moreover, the all-important part played by individuality in everybody's life is all too often forgotten.

I shall be talking later, in the chapter on amusements, of the effect of sport upon the psychological life of those who watch it.

But once again I wish to emphasize that the advice that I give in this book is given purely from the point of view of the preservation of youth and the stopping of degeneration.

First of all I must say that I do not believe that all young people can benefit from all sports.

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You must learn to choose a sport that suits firstly your individuality and secondly your physical and physiological condition. Then it is necessary to take it 'in doses'—always in doses—no matter how much physical and psychological effort it may cost you.

'Sport can only be considered as a *physical exercise* if it provides a favourable stimulant to the functions of the organism.'¹

No truer word has been spoken. Physical exercise must be *positive*, but all sports do not fulfil the necessary conditions and above all do not fulfil them for everybody. Many sports are harmful to certain natures. Just as there is no universal diet, so is there no universal sport.

As a doctor I believe that since science and medicine are concerned with the aesthetics of man—there is an 'aesthetic medicine' as well—physical exercises and even sports should become their auxiliaries. Physical education must be scientific, and exclusively scientific.

It must be realized that as science has not yet discovered the physiological effects of the different sports, it has not been able to establish even approximate rules enabling it to prescribe the most favourable sport to any particular individual.

With sport, as with all other factors of human life, physiological needs must dominate all other considerations.

In general, everybody ought to play some sport or, better still, do some physical exercises, but in this field more than in any other you must observe caution and pay particular attention to the right 'dose'.

In this problem of sport, psychology is often at odds with physiology. Young people choose sports psychologically which do not suit them from the physiological standpoint.

¹ *The Physiology of Sport*, by Drs. Germain Laporte and A. Peccelon.

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'When choosing a sport, the problem must be judged biologically'.¹

There is a new science called 'morphology' which attempts to establish different types of individuals according to the predominance of certain functions. It divides them into digestive, respiratory, muscular and cerebral types.

But where sport is concerned, in which the qualities and defects of the organism play a large part, these 'bio-type' categories do not provide us with any serious starting point.

According to my theories, I am convinced that each individual, before choosing a sport, should be examined by an Externotherapist.

If everyone were capable of rationing his exertions when playing games there would not be any problem. But everybody overdoes it and nobody takes physico-physiological individuality into account.

Do not believe that athletes live any longer than other people or resist illness any better or grow old less quickly. Very often the opposite is the case.

As Professor Charles Richet said:

'We have repeatedly had athletes in our care. They do not appear to be any more resistant to infectious diseases or to ageing, in fact *quite the contrary*.'

And later:

'Hippocrates had already remarked that the winners in the Olympic Games were very often the victims of "tabes", an expression which at that time was used for consumption, or pulmonary tuberculosis.'

It is impossible for me within the scope of this work to treat this important problem of sport in any detail and to classify the different sports in accordance with certain physiological

¹ *The Physiology of Sport.*

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facts. Therefore I must restrict myself to saying that from the point of view of externalism sports are very useful for both bodily and mental health, while declaring that you must know how to choose your sport and know how to arrange and *limit* your practice of it.

Equally I could talk about sport as a curative treatment of obesity, thinness, weakness, deformities and other abnormal conditions. But in this case, as in the others, the psychophysiological individuality must dominate all other considerations.

Therefore I shall not give any rules concerning sport, and shall end by saying that everyone should practice some sport, always remembering that physical exercises alone will not provide us with the keys to either youth or longevity.

Smoking

Smoking must be considered as a permanent menace to human health; nevertheless you cannot stop people from smoking.

Over the last thirty years the number of smokers has been greatly swollen by the inclusion of women, to the great benefit of those governments who have found in tobacco an inexhaustible source of revenue. Today you can almost count on your fingers the people who have never smoked, and it must be recognized that the pleasure of smoking is universal and deeply rooted in modern conventions.

None of the efforts of the scientists, doctors, societies and leagues against tobacco have had any success in reducing the number of its staunch supporters.

I believe that we must view this problem on the physiological and even biological level and recognize the fact that some tens

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of generations of smokers have by process of heredity handed down to us a certain tolerance on the part of the human biochemical condition towards tobacco, and even perhaps a certain immunity against the effects of nicotine.

When you remember that nowadays young mothers smoke, as well as their husbands, you may very well surmise that future generations will inherit from both parents an organism which will tolerate tobacco. And with each new generation the danger will continue to diminish because it will acquire a more and more marked immunity.

During the course of the last forty years certain people have predicted the most terrible diseases for those who smoke; not long ago an English scientist, Dr. Horace Youles, claimed that cancer of the lungs was frequent amongst people who abused the smoking habit, and added that you should not smoke more than twenty-five cigarettes a day if you do not want to run the risk of incurring this disease.

My opinion upon this subject is that it all depends on the individual.

Of course, I know quite well that you must not smoke heavily, but science is in no position to state categorically that a certain defined quantity of tobacco may be tolerated by the organism and that it is dangerous to exceed that limit.

I would like to quote my cousin's words on this subject: 'The question of whether or not nicotine provokes sclerosis of the blood vessels is not entirely explained.' (That is to say, not even in the case of arterio-sclerosis.)

It is my contention therefore that in this problem of tobacco, as in many others, individuality plays a very important part. You must keep watch over yourself in order to be able to verify the danger signals: migraine, pallor at the finger tips, coughs, intermittent lameness, etc.

But it must not be forgotten that there is a form of sclerosis

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of syphilitic and alcoholic origin and that sclerosis attacks people who do not smoke, do not drink and are not syphilitic.

Metchnikov remarked upon that when speaking of sclerosis, and declared, according to his theory of intoxication, 'that when there are no apparent causes, the intoxication must be put down to the innumerable mass of microbes multiplying inside our intestines.'

In accordance with my theories, I believe that sclerosis itself is the result of 'natural' degeneration (ageing) and that the other causes simply aggravate the process. And tobacco is one of those causes.

But there is another question to be faced. Over the decades smokers introduce nicotine into their organism. The latter adjusts itself to this at first, to a certain degree, but gradually the nicotine becomes an indispensable element in the biochemical state of the metabolism. To stop the intervention of nicotine is equivalent to depriving the organism of one of its customary supports.

Professor Charles Richet, speaking on this subject of old people and tobacco, said that 'the first effect of giving up smoking would be to throw the old people completely *off their balance*'.

Equally I believe that this theory applies not only to the old but to everyone except the very young.

From the point of view of Extinctionotherapy, tobacco, like all other habits, is an indispensable element for smokers except in the case of very serious illness. It is equally a physiological and even psychological factor, for it gives great and varied satisfactions.

So let us give up smoking completely only in cases of serious and indisputable illness.

Do not think that I am pleading in favour of tobacco, for really it would be much better never to smoke. But I accept it

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as a factor that today is almost inevitable. Obviously you should smoke as little as possible but, being a smoker myself, whenever I approach this problem I always visualize that eminent statesman, Sir Winston Churchill, sucking his cigar all day long without any harm to his mental capacities or apparently to his physical state.

Perhaps if we were to deprive him of his famous cigars, he would become an inactive old man and we would lose a great political figure.

These then are my rules as regards smoking, and they are very short:

I. No chain-smoking; always have a long pause between two cigarettes or pipes.

II. Try not to smoke when walking. (Women should have little difficulty in this.)

III. Do not sleep in a room filled with tobacco smoke.

IV. Use cigarette-holders and pipes. Clean them out every day with alcohol.

V. Do not keep a cigarette in your mouth all the time.

VI. If you are wise you will not inhale.

VII. Try to smoke less when you are working sitting down. Smoke has a very bad effect upon the eyes when you are bending over your desk.

VIII. Get into the habit of not smoking at night, before breakfast and for half an hour before each meal.

IX. Make every possible effort to smoke less before going to bed. Generally, smoke more in the afternoon and less in the morning and evening.

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If you have just studied this part of my rules you might think that I have forgotten to enumerate certain individual factors and certain physical and psychological influences.

It is obvious that in these few pages it is impossible for me to take into consideration all the aspects of the individual behaviour of man, or rather, of men and women, and above all when I am trying to prove that individuality plays a predominant part.

The externotherapist doctor, and the future clinics or institutes of Externotherapy may perhaps be responsible for these individual investigations and drawing up the necessary rules.

I hope myself to be able to complete and enlarge my observations, experiments and scientific judgments and to present them in a detailed work dealing exclusively with physical and psychological rules in which I will analyse every factor and every force that surrounds us, dominates us, helps us or attacks us.

Finally, there will be scientific proof of my reasons for recommending this or that rule, for the reader may very well believe that a recommendation is not sufficient and that each rule should be explained from a scientific point of view.

Psychological Life

It would require a whole book to deal fully with the problem of psychological life and its influences, and the limited size of this work does not allow me to put before you all the rules which should govern this important branch of man's vital activity.

With this problem, as with the others, I shall content myself therefore with giving you the most simple and most universal of my recommendations.

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You know already, from what you have read in the earlier chapters, that as far as physical health is concerned, each human being must be considered as an individual entity. This viewpoint applies equally to the psychological life, even more so, for knowledge of the body has been taken very much further than knowledge of the soul.

But our psychological life depends equally upon its environment, its surroundings. It is formed by external influences, but each person's reactions may be different.

Therefore, we should consider the psychological life from two aspects:

- The individual 'mind' which results from the personal psychological life and from each person's particular sensations and judgments
 - The influences picked up from the exterior world, that is to say, the reactions of the individual to psychological influences coming from outside.
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Amusements

And this leads me to speak to you about amusements which are regarded as the most common and simple 'psychological nourishment.'

Of course there are many varied forms of amusement and everybody chooses his own according to his tastes and his means. But there are many forms, that we will call public amusements, which play an important part in men's lives, especially in towns.

In large cities the majority of individuals like public amusements that may sometimes be artistic or cultural but most often are those which are more easily accessible to the large mass of people.

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Nearly everyone amuses himself as he pleases, sometimes quite haphazardly, when it would be more rational to select his relaxations with reference to their influence and effect upon a given personality.

Moreover, if a form of relaxation which is taken in moderation is susceptible of provoking a salutary psychological reaction, the result of making excessive use of it may be harmful to the highest degree.

According to my observations and the conclusions arising from them, I consider as public amusements:

1. Plays (straight and musical), concerts, exhibitions and lectures
2. The cinema
3. Sports
4. Dancing

From these, therefore, choose those which really please you and will be most beneficial to you. Do not sacrifice this psychological nourishment to the conventions and habits of your social environment, to consideration of snobbery or to the enthusiasms of a flock of sheep.

Plays, Concerts, Exhibitions, Lectures

All these forms of relaxation constitute 'psychological nourishment' of great power and superior quality, but they must not be taken lightly.

When you go to some performance or other, be well rested beforehand. A physically and psychologically tired body will get nothing out of it but additional fatigue, the very reverse of the effect desired. Then take note of your impressions and go

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quietly to bed. Afterwards you can discuss what you have seen or heard with your friends and family. Recall the artistic memories that the performance gave you, analyse them, and look them over extremely critically.

Of course, an excellent performance of a play or some musical work, the eloquence of a speaker or the beauty of a great painting may all leave you with an agreeable impression, but it is none the less true that 'psychological nourishment' only comes from the depths of the feelings aroused by hearing the performance or speaker, or looking at the picture. This I call the 'digestion' of the 'psychological food'.

If you do not experience these impressions, if, when you leave the theatre, the meeting or the museum, you have forgotten what you have just seen or heard, it is because this type of leisure activity does not suit you. In that case it is useless to keep on. Try something else.

A performance should inspire enthusiasm and satisfaction in you, it should provide you with new energy—it should in fact, rejuvenate you.

If, on the contrary, you feel tired, it means that you are using up too much energy. In that case, go less often.

The Cinema

People of a certain age understand better than others the considerable role that the cinema plays today; it is a double-edged weapon, extending to the most remote corners of the world and bringing before the general public not only works of literary, artistic or scientific interest, but also works of fiction that very often lead to feelings contrary to morality or the display of unhealthy passions.

It cannot be denied that films exercise a great influence

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upon the lives of the general public and within the family circle. From a very young age children go to the cinema, and old people as well have got into the habit of this form of amusement.

I want therefore to emphasize the part that the cinema plays in people's lives and equally in the psychological and moral education of the young.

The play of images creates a psychological fatigue that can be harmful to the individual. You must also remember that the rapidity with which scenes flash upon the screen can induce physical fatigue, notably of the organs of sight, and also nervous excitement.

I believe that the cinema should not be the *sole* relaxation for either youngsters or adults, and visits to these darkened places of entertainment should be limited to two a week. Long programmes are in fact a cause of fatigue from all points of view.

Also cinema proprietors must pay attention to their clients' comfort and ensure them perfect visibility, air conditioning and perfect functioning of projection apparatus so that neither the sound nor the picture constitutes a source of fatigue.

Sports

I am not speaking now of the part played by sport in physical education, but of sport as an entertainment that is very much appreciated by the general public.

Sporting events arouse strong emotions which may be regarded as 'psychological nourishment'. Anyone who attends a match for an hour or two is radically transformed from the psychological point of view by the emotion that he feels and which dominates both mind and body.

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In my opinion sport is a powerful means of attracting an individual's attention and capturing his interest so that he forgets all his other preoccupations during the course of the match or the race.

Psychologically, sports provoke powerful shocks that must be utilized rationally, but without arousing useless excitement. I believe therefore that everyone should seek the advice of a doctor or a psychologist before choosing a sport as a means of positive mental relaxation. This would prevent certain spectators—and their numbers are great—feeling much greater fatigue than the players themselves.

Once again therefore I wish to draw your attention to the importance of a judicious choice of a particular sport as a form of relaxation.

I class dancing among psychological stimulants even when they are physical exercises. For I believe nevertheless that their influence and the psychological fatigue that results from them are more important than the purely physical fatigues that they provoke.

In my recommendations I shall talk neither of classical ballet, which forms a very important psychological relaxation for its audiences, nor of the popular folk dances which in some countries still play a part in the psychological life of the people, but of the modern dances for which there is so great a vogue in the world nowadays and which have been imposed upon us by the speed age.

Older people criticize these dances without considering that their parents, in the past, had criticized theirs.

Modern dancing also plays a great part as a form of relaxation but in this case it is relaxation of a somewhat particular type for it brings different factors into play:

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- Sexual sensations, since dancing is a legitimate means of getting close to your partner
- Physical movements, that you might ally with sport
- The rhythm and the suggestion of the music
- The feelings that may be aroused by 'exhibitionism'.

From what I have just said you will understand that dancing is an indisputable cause of different fatigues.

In the majority of dance halls it is impossible to breathe normally; smoke, perspiration and dust are all obstacles to the free functioning of the lungs. Furthermore, the alcoholic drinks that are consumed in the course of a dance only aggravate this state of affairs.

None the less, the power of this entertainment remains enormous by virtue of the extreme 'sexual stimulation' that it causes.

I do not wish here to make a case against dancing, which I regard as one of the factors of modern life, but to give the following recommendations which may help to remedy its harmful aspects:

I. Do not overdo your attendances at dances. Dance twice a week at the most.

II. Dance in well-ventilated halls.

III. Smoke little when at a dance, or better still, do not smoke at all.

IV. Do not dance non-stop, but at most only every other dance.

V. Pay great attention to your breathing; stop immediately if you have to breathe in through your mouth.

VI. Two hours dancing is a maximum.

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VII. Do not dance on a completely empty stomach.

VIII. Wear light, easy-fitting clothes.

IX. Have a rest for about ten minutes before leaving the dance hall.

X. Be very restrained in your consumption of alcoholic drinks. Strong drinks are definitely not advised.

XI. Violent dances in which the body suffers bumps and buffetings are only for the very young.

XII. The most healthy dances are the slow ones.

XIII. Keep an eye on your weight (especially if you are young) and if you are getting too thin, give up dancing for two or three months.

XIV. It is dangerous to have sexual relations ~~after~~ the fatigue of a dance.

XV. Never stay at a dance all through the night.

XVI. Women over forty should realize that the fatigue brought on by excessive dancing is the quickest way to rapid ageing.

XVII. Equally, men over forty should not forget that the fatigue arising from dancing and the excitement which results from it hasten the onset of age.

However, in these last two cases, dancing in moderation is permissible for both men and women, if they treat it in a rational way.

I know that these rules will not please certain of my readers whatever their sex; and that dance addicts will never become

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disciples of mine. But I feel that I have done my duty as a doctor by showing you the dangers that badly managed dancing may have in store for your organism.

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In this chapter on psychological life I have only touched upon the problem of external manifestations which amuse, distract, or excite us. My main wish has been to stress the influence which these forms of relaxation have upon our physical and psychological being. But our psychological life is made up of hundreds of other most delicate and most intimate factors which constitute a problem that philosophers have tried to solve throughout the ages.

As for me, I can only state this: never forget that to a very large extent all psychological forces, good or bad, dominate our physical bodies and our physiological functions.

I do not propose to struggle against these factors, but to analyse them and to prescribe the correct 'dose' for each individual in order to discover the psychological forces necessary for the preservation of a healthy balance and, at the same time, new vital forces for the fight against degeneration and physical and psychological decadence.

Reading

In order to complete as far as possible the description of my methods and to allow the reader to appreciate the importance of the psychological factor in daily life and also to realize that this factor can be analysed and prescribed in such a way that he can draw positive results from it, I want to add to the instructions given above my rules concerning reading.

Reading plays a principal part in the lives of the general

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public. It dominates the psychological formation of a man, even more than the other 'psychological nourishment' mentioned earlier.

I cannot in a few pages pretend to give a complete analysis of this powerful and profound factor.

Nevertheless I do emphasize that the manner of reading and the ability to react to that reading, are the keys to the psychological life of many people.

It is part of my theory of Externalism to claim that this psychological nourishment, reading, can be administered in 'doses', just like any chemical remedy, and that, at different stages in the life of a human being, it can function as a true 'psychological medicine' and not only as a simple 'nourishment'.

When I speak of administering, I am not thinking of controlling everyone's reading, but of discovering what reading should be advised in this or that phase of life, and in a given psychological state.

Throughout this book I have insisted upon the fact that all positive psychological influences can affect, dominate and even change our physiological powers. Therefore you must use books as a source of new spiritual strength, of spontaneous emotions and of satisfactions capable of re-establishing your psychological balance and, consequently, your physiological condition.

Reading is perhaps the most powerful and effective way of dominating your physiological condition. It can cause 'conditioned reflexes' of which I spoke in an earlier chapter.

But you must never forget that *positive* forces can become *negative*, just as an apparently harmless remedy taken in too strong a dose can, in certain cases, lead to poisoning or even death.

However, as far as reading is concerned, you must realize that its power rests more in its 'quality' than its 'quantity'. It

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is obvious that abuse of reading can lead to useless fatigue of both body and mind, which is as harmful as any other form of fatigue.

Therefore you must find the most favourable psychological moment for any given reading so that your physical and intellectual forces can obtain the maximum profit from it.

Never laugh at people who, as evidence of a certain eclecticism, read detective novels as well as works of the highest literary, scientific or intellectual quality. They are very wise, or they understand that perfect balance in their choice of reading matter can only be obtained by following variations of individuality and emotionally creative literary appeal.

People who, in a spirit of imitation or from motives of snobbery, read solely works approved by the critics or the advice of their own circle will never get personal satisfaction from their reading, and the enormous psychological strength that this constitutes will thus be lost—or almost lost—to them.

Yet it is just this individual 'satisfaction' that you should seek, more than the majority of the other psychological factors that reading will give you.

It is possible to draw up detailed 'rules' for reading suitable for the psychological state of groups of individuals of certain ages, education or employment.

We can make use of reading as a 'medicine' for the mind. For this it is necessary to find books adapted to the state of mind of invalids who have long been confined to bed by their sufferings. We can also recommend, or at least criticize negatively, books for anæmic people, the weak-minded, the timid or the emotional.

Finally, to make clear your individuality and to establish the diagnosis of the health of your whole being (body and mind), it is necessary for us to know the preferences of our patients, the patients of Externotherapy.

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Individuality is established by the sum of all physical and psychological manifestations of each person. We have already spoken of spontaneous acts and emotions and the part that they play. Now imagine the enormous psychological strength that a book can yield by creating these sensations and satisfactions and even by provoking these spontaneous actions!

To know how to choose a book and to assess it, to be able to understand and retain the impressions, ideas and images that it suggests to you, is not only a sign of feeling, of intelligence or of education, but also—and to a very large degree—an indication of the psychological and even physiological state of a human being.

I could give you many detailed 'rules', analysing the classical works of famous authors with the object of discovering which work is most useful for such and such a psycho-physical state. But that is not the aim of this book, and furthermore I intend to return to this subject in a later work.

Therefore, with this problem, as with the others, I shall confine myself to some general ideas to show that reading must be adapted to the necessities of 'psychological nutrition', taking into account all the factors of individual life and behaviour, in order to get the maximum of positive strength out of it.

Since it is my intention only to give you the simplest and most natural instructions for this struggle against bodily and mental degeneration, these are my rules concerning reading:

I. Do you like reading or don't you? Please realize that reading is as necessary to your health as all other factors which determine the stability of your whole being.

II. Make it a rule that at certain times you will *live* with the heroes of your books and participate in their actions. In this way, during these periods, you will forget and leave behind you your cares and your environment.

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III. Select works suited to your temperament and choose those which interest you and give you personal satisfaction.

IV. Do not make yourself read books that you cannot understand easily and which will be liable to induce fatigue. You must 'live' your books by interesting yourself in the action and ideas that they relate.

V. You must always choose authors who have a psychological affinity with you.

VI. Before reading a book decide whether your psychological state requires calmness, deep emotion or violent action. It is in this way easy to know what work will give you the sensations that are necessary for your state of mind.

VII. It is wrong to claim that certain hours are favourable to reading. So read when it pleases you without regard to the time you devote to it.

VIII. Do not tear yourself away from a book that grips you because 'it's time I stopped'. Go on reading it, so as not to interrupt the sensation and satisfaction that it induces. The psychological fatigue that you feel will be counterbalanced by this 'psychological nourishment', and, in any case, real fatigue will not trouble you.

IX. Read reviews of books and make your choice from those that catch your imagination.

X. Do not impose the books that please you on your friends and acquaintances. Respect the individuality of others, particularly of youngsters.

XI. Read first of all for yourself, and have the courage of your convictions about what you read. Nevertheless, it is often useful to keep these opinions to yourself.

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XII. For some people reading is relaxation; for others it is a mental stimulant. But with everybody it is the organism which 'judges' and commands. The same work can inspire the most diverse sensations and the most varied psycho-physiological influences in different individuals.

XIII. Some people register and retain the images, ideas and actions suggested or presented by reading a book; others forget them. This is of no importance, for the book has its influence upon all in the same way.

XIV. Read your books again if you want to, but do not force yourself to re-read what you have not understood. Reading must be pleasant and easily comprehensible.

XV. What some people call the 'bad habit' of only reading certain parts of a work may simply be a reflex of your own nature and its requirements.

XVI. Do not forget that the pleasure you get out of a book is valuable nourishment for you.

XVII. Certain persons can read, understand and assimilate a book with a background of noise, music or chatter. Others, on the other hand, demand complete silence. So discover for yourself the most favourable environment and bear it in mind for your reading.

XVIII. The psychological value of what you read is not measured in terms of greatness of the work but of the psychological demands of your particular personality. When reading, look out for the real and sincere sensation which is right for it.

XIX. Do not criticize other people's reading. The fact that one reads a 'learned' work is not always proof of the intelligence or degree of education of the reader. Similarly, to read a popular work does not indicate lack of culture. Reading, whatever it

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may be, must be considered as a powerful instrument for achieving psychological balance.

XX. A feeling for the beauty of literature is a gift which cannot be acquired by reading to order. But, scientifically and medically, everything that you read can influence your individual balance.

Conclusion

And now, what conclusion can we draw from these rules, which are intended to guide you in your everyday conduct, physically and psychologically, and which have filled a chapter that may perhaps have seemed rather long to you?

In replying to this question I cannot do better than cite the following rule, intended this time for the Externotherapist:

By its action upon the body and the soul, Externotherapy must find a way in which the life and environment of a human being can be so controlled that he can live in a state of stability, physiologically and psychologically.

For us, as Externotherapists, individuality remains, from every point of view, the dominant factor.

Therefore we shall continue to work, by means of our researches and experiments, to draw up the maximum number of scientific rules valid for the greatest number of people.

A Few Last Words

In an epoch in which we see the spinners of fine phrases acquire a following that grows more and more astounded, more and more inclined to believe in modern fairy tales, an epoch in which we have seen common sense take some disquieting

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holidays and people book seats in advance, with good money, for the next journey to the moon, I wished first of all with this book to combat an illusion, that of *rapid rejuvenation through the administration of some miracle cure*.

I am neither playing 'doubting Thomas' nor trying to destroy dreams. On the contrary, I believe in the possibility of rejuvenation, and my faith is even a scientific certainty. But I have said it before, and I repeat it now: *this possibility can only be realized by the joint application of a number of methods*.

Skin-grafting? Injections? Ointments? An enormous dose of hormones? Not any of these by itself can banish the scourge of old age. But if one of these remedies, already extraordinary in themselves, is taken together with a system of new exercises, a new way of behaving, a new art of living; if, in fact, the science of rejuvenation is complemented by an Art of Rejuvenation, an Art of Keeping Young, then yes (if you will forgive the trivial expression) the 'dream of Faust' is in the bag!

I would like to remind you that this book has, in effect, two facets, two aims:

In the first place it is a guide to rejuvenation with different signposts, according to the chapters: 'Beware! Illusion ahead — 'Possibility Avenue' — 'Main Through-Road' — 'Main Road under Construction'. Taken all in all, I would be very surprised of the reader who obeys the rules and completes his or her Individual Externo-type Record cannot gain another twenty years.

In the second place this book is an appeal to the public and to the medical profession to bestir themselves and give up certain habits, to come closer together and to 'individualize' themselves. We can only rejuvenate individuals who have a skin of their own, a mind of their own and a well-disposed doctor to watch over them in the full light of modern science.

And now that I have shown to the best of my belief both the

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ordinary reader and the scientist that so far from rejuvenation as a sleight of hand, a magic dream, or a new trip to the moon, I see it as a fairly heavy-going uphill climb towards our biological deliverance, I hope I may be allowed to sketch in the main outlines of a more or less immediate future.

Not a future that you can sit down and wait for while you twiddle your thumbs, but a future that you must create, must build with your own hands and your own will.

Here and now you can assist in this by keeping this book beside your bed as a practical weapon against physical decay—a sort of guarantee of health. You can assist further by *freely obeying* the Externalist Rules (freely, because there can be no question here of obeying without understanding). And finally, by scrupulously filling up your Individual Externo-type Record (I repeat this deliberately) you will be accomplishing something of great moment both for yourself and for your immediate circle.

Every Externo-type Record that is duly filled up will become in fact another stone of the vast Externotherapy building that we are erecting—and the word building must be taken both metaphorically and literally.

Metaphorically, it will be an assembly of facts that have been confirmed and made fruitful by a conjunction of methods.

Literally, it will, I hope, one day be an institute built of real, enduring stones, a Central Clinic of Externotherapy, with men and women of flesh and blood (the healthy as well as the sick) who will come there to recreate their youth and to find once again their vigour and their physical and psychological charm. And before them will come their indispensable records.

It is in this building that we shall take the census of the *young people of the present* and the *'young people of the future'*.

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holidays will often be necessary for me to disturb myself, my friends and my labours in order to seek further afield practical means of creating this concrete tangible thing, this 'House of Longevity', with its own address, its own front door and its own commissionaire to welcome visitors. A house in which yesterday's miracle will tomorrow be nothing but the 'commonplace phenomenon of the conquest of old age'.

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But . . .

For there is a final 'but', and with it I shall end this little book.

But if I have to remain alone, or accompanied by only a handful of friends, be they the most stubborn fighters in the world, then nothing of this immense task will be achieved. Nothing . . . or so very, very little. And so, let us be many in order to be strong, and let us be strong in order to be the victors in a struggle which is not only worth every effort but which is also our duty.

DR. VICTOR BOGOMOLETZ,
Kiev University

The country and type of climate in which you spent your
youth up to the age of 21
(*living conditions changes moves*)

Nature of any studies undertaken Degree of success or
failure

Present employment

Serious surgical operations that you have undergone

All **important** mental and psychological events past and
present

II. — SKIN, NAILS & HAIR

state of the skin over the whole body

a) Colouring

Reaction to various external contacts

Congestion or pallor (*tendencies to and causes of*)

Reaction to cold and heat

Perspiration (*degree and causes of*)

— Sebaceous elimination of the face (*fatty excretion*)

Special marks on the face and body

Skin diseases (*of the whole body*)

(b) How long do cuts and wounds take to heal?

How long do they bleed?

- (c) Bruises (*ecchymoses*): do you bruise easily?
How long before bruises disappear?
- (d) Pimples, warts, acne:
- (e) Eyelids (*wrinkles under the eyes*):
- (f) Nails, hair (full details):

III. — EYES

- Abnormalities, congenital or acquired:
- Sight:
Condition of the whites of the eyes (*conjunctiva*):
- Reaction to sun:
- Fatigue:
- Diseases:

IV. — HEARING

- Diseases:
- Reaction and sensitivity to noises:

V. — NOSE

- Shape:
- State of the membrane:
- Frequency of colds:
- Tolerance or dislike of different smells and perfumes:
- Operations undergone:

VI. — MOUTH

- State of gums and mucous membranes:

- Degree of development of taste:
- Sensitivity to different temperatures:

VII. — TEETH

- General condition
- Colouring and shape (*changes and irregularities*)
- Number of teeth.
- State of teeth during childhood

VIII. — THE HEAD

- Frequency of headaches (*known causes, appearance, duration, where located, development, etc.*).
- Different causes (*sun, noise after mental effort, etc.*).
- Factors that help to make the headache disappear (*rest, medicines, change of air, walking, etc.*)

IX. — MENSTRUAL PERIODS

- Regularity of onset.
- Amount of discharge:
- Discomfort experienced:
- - Mental and sexual disorders (*and all other details that you have observed*):

X. — DIGESTION

- Appetite.
- Hunger (*regularity of meals, spontaneous hunger, rapidity of satisfaction*).

- Greediness :
- Usual foodstuffs :
- Quantities consumed of—bread, milk, meat, fats, vegetables, preserves, sugar, drinks :
- Indigestible foods :
- Frequency of indigestion and other pains :
- Mastication (*quick or slow*) :
- Persistence and nature of certain tastes :
- Dryness of the mouth (*frequency, duration, known causes*) :
- Salivation :
- Thirst (*frequency*) :
- Illnesses of the digestive canals :
- Influence of changes of climate on digestion :

XI. — BREATHING

- All details that are easily observed, all noticeable difficulties :
- Influence of change of climate, temperature, place, upon respiration :
- Causes of breathlessness :

XII. -- MORPHOLOGY

- Skeleton (*full particulars of bone structure*) :
- Length of limbs :

THE INDIVIDUAL EXTERNO-TYPE RECORD

When you have completed this record from your own self-observation and self-supervision please send it to

DR. BOGOMOLILZ
c/o ARCO PUBLICATIONS LTD
10 Fitzroy Street, London, W 1

The Individual Externo type Record is a personal record of observation and supervision of yourself. If you complete it carefully you will be providing your doctor with the prime elements for his Externo-diagnosis.

It is not meant only for the aged and the ageing. It is of equal importance for the very young and the very healthy.

If you wish to use this Record properly you will have to answer a number of questions which can only be answered from intimate knowledge of yourself. It will become the Record of your own personal Externo-type. It cannot and it must not, therefore, be filled up by anyone except yourself and the doctor who knows you best and best understands everything that differentiates you from other people.

Every one of us is unique.

INDIVIDUAL EXTERNO-TYPE RECORD

I. — GENERAL INFORMATION

Height

(preferably with heights of both parents especially if there is any great difference between theirs and your own)

Weight

(taken each week over a month, and indicating any important changes in the course of the last few years)

Age

Are you fat or thin?

(at what age did you begin to grow fatter or thinner? Was it a result of illness mental or other factors?)

Give any serious illnesses of your parents and if possible of your grandparents.

What illnesses did you suffer from as a child?

Any prolonged medical treatment since the age of 21, and causes of it

Any medical treatment or medicines regularly used now

— Vaccinations and serum injections since childhood

— Approximate age of puberty,

- Development of thorax, skull, abdomen, bust
- Condition of muscles

XIII. — SEXUAL LIFE

- All physical physiological and mental details

XIV. — MENTAL AND INTELLECTUAL LIFE

(a) Nature of work

Capacity for work

- Liking for interest in dislike of your normal activities at work
- Hygienic state of work places (*air light etc*)

Degree and rapidity with which you become fatigued

(b) Reactions to æsthetic emotional artistic and cultural factors

Music

Literature (*type romantic scientific philosophic thrillers etc*)

Impressions left by reading and how long you retain them

Fine Arts state type with details explain emotions experienced and their duration the sensation of æsthetic 'appeal' and degree of intensity

Lectures state whether you like to listen to them or if you can read them when printed

Radio and television the programmes you appreciate most

(c) Choice of amusements and forms of relaxation

Passive ones (*reading odd-jobs, etc*)

Theatre, cinema what type of performance preferred, fatigue felt emotions aroused how long do you retain impressions etc

- Active ones—sport, strolls, walks, visits to cafés, bars, restaurants:
- Dancing—What dances do you prefer, and why?:
What emotions do they produce and why?:
- (d) Mental tendency towards optimism or pessimism:
- (e) What importance do you attach to pleasure and “sex appeal” from a mental point of view?:
- (f) Nature and duration of mental rest ; what conditions are necessary for it:
- (g) Frequency and type of dreams (*pleasant, unpleasant, nightmares*):

XV. — SENSITIVITY TO EXTERNAL INFLUENCES

- (a) Behaviour and reaction to sun, wind, rain, heat, cold, etc., to changes of atmospheric pressure, climate and place:
- (b) Behaviour and reactions in different type of places:
 - forests psychological:
 - physical:
 - intellectual:
 - sexual:
 - mountains (*as above*):
 - seaside (*as above*):
 - towns (*as above*):
- (c) What holidays do you prefer? (*time of the year and region*):
- (d) What kind of baths do you prefer? (*sea, river, showers etc.*), and at what temperature do you like them?